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Images of Diseases

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Images of Diseases

Abstract

The chapter contains annotated color images of emerging diseases and exotic diseases in wild and domesticated animals.

Keywords

zoonoses, infectious diseases, parasitology, animal diseases

Disciplines

Large or Food Animal and Equine Medicine | Veterinary Infectious Diseases | Veterinary Pathology and Pathobiology

Comments

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SECTION 3

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Emerging and Exotic Diseases of Animals IMAGES OF DISEASES

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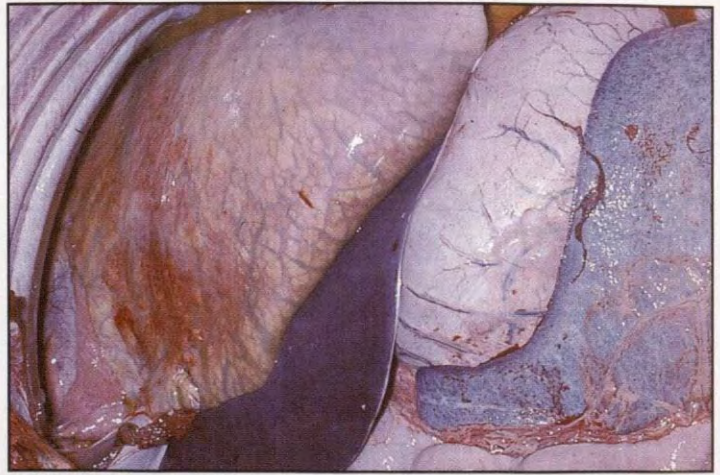
University of Melbourne, Australia



African Horse Sickness

Horse. Abundant froth draining from the nostrils reflects severe pulmonary edema.

Source: PIADC



African Horse Sickness

Horse. The lung exhibits severe interlobular edema. There are petechiae on the pulmonary pleura and the splenic capsule.

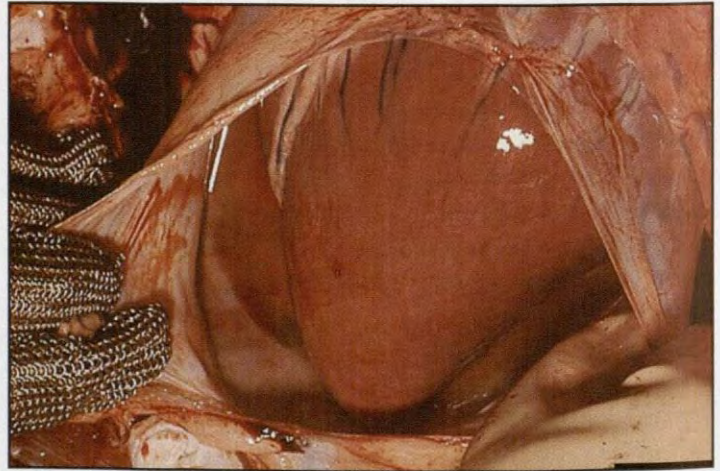
Source: PIADC



African Horse Sickness

Horse, peritoneal cavity. There is excessive straw-colored fluid (hydropertoneum).

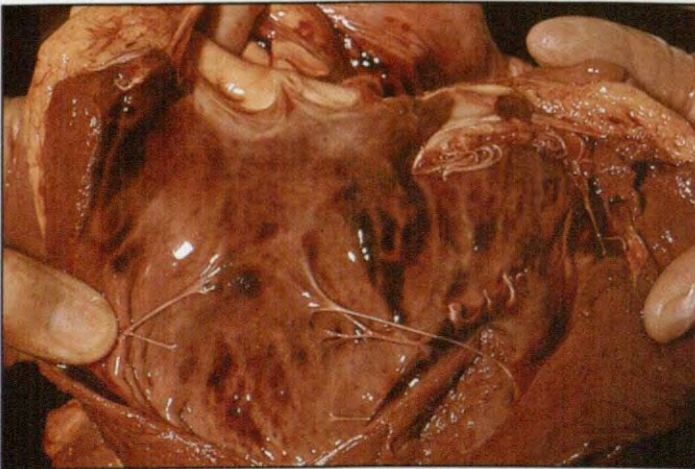
Source: PIADC



African Horse Sickness

Horse, heart. The pericardial sac contains excessive, slightly turbid straw-colored fluid (hydropericardium).

Source: PIADC



African Horse Sickness

Horse, heart. There are many subendocardial hemorrhages.

Source: PIADC



African Horse Sickness

Horse, cecum. There are serosal petechiae on the apex of the cecum.

Source: Noah's Arkive, PIADC



African Swine Fever

Pig. There is bloody, mucoid, foamy nasal discharge.

Source: PIADC



African Swine Fever

Pig, limbs. There is marked hyperemia of the distal limbs.

Source: PIADC



African Swine Fever

Pig, perineal skin. There is a large sharply demarcated zone of hyperemia.

Source: PIADC



African Swine Fever

Pig. There are multiple sharply demarcated foci of cutaneous hemorrhage and/or necrosis; hemorrhagic lesions may contain dark red (necrotic) centers.

Source: PIADC



African Swine Fever

Pig. There are multiple sharply demarcated foci of cutaneous hemorrhage and/or necrosis; hemorrhagic lesions may contain dark red (necrotic) centers.

Source: PIADC



African Swine Fever

Pig, skin. Necrotic exudate is sloughing from the lesion on the left. There is a rim of hyperemia around the focus of hemorrhage and necrosis (infarct) on the right.

Source: PIADC



African Swine Fever

Pig, kidney. There is moderate perirenal (retroperitoneal) edema.

Source: PIADC



African Swine Fever

Pig, kidney. Petechiae are disseminated throughout the cortex, and there are larger coalescing pelvic hemorrhages.

Source: PIADC



African Swine Fever

Pig, kidney. Close-up of cortical petechiae.

Source: PIADC



African Swine Fever

Pig, kidney. The cortex contains numerous coalescing petechiae and ecchymoses.

Source: PIADC



African Swine Fever

Pig, urinary bladder. There are disseminated mucosal petechiae.

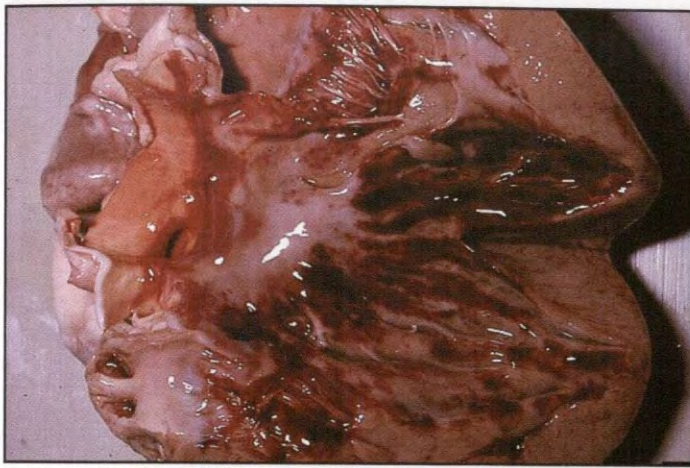
Source: PIADC



African Swine Fever

Pig, heart. There is abundant straw-colored pericardial fluid (hydropericardium), and multifocal epicardial hemorrhage.

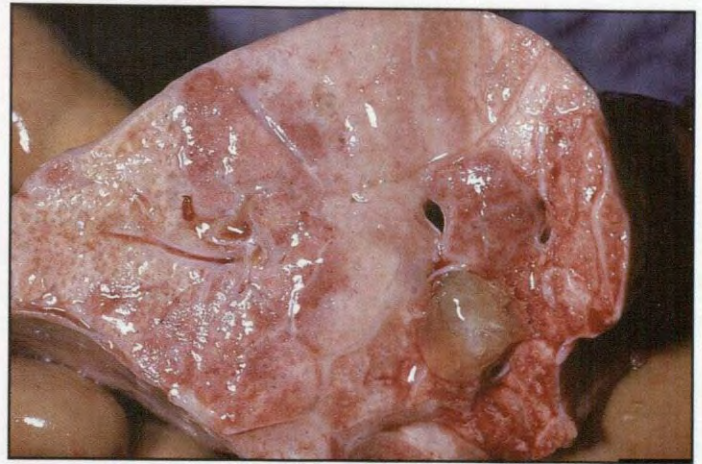
Source: PIADC



African Swine Fever

Pig, heart. Subendocardial hemorrhage.

Source: PIADC



African Swine Fever

Pig, lung. The lung is noncollapsed and edematous; there is dorsal hemorrhage and ventral tan consolidation.

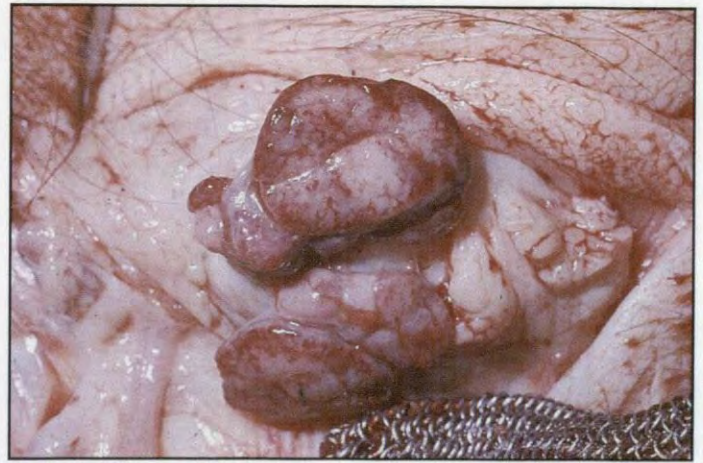
Source: PIADC



African Swine Fever

Pig, stomach. There is "paintbrush" hemorrhage on the serosa.

Source: PIADC



African Swine Fever

Pig, mandibular lymph node. There is moderate peripheral (medullary) hemorrhage.

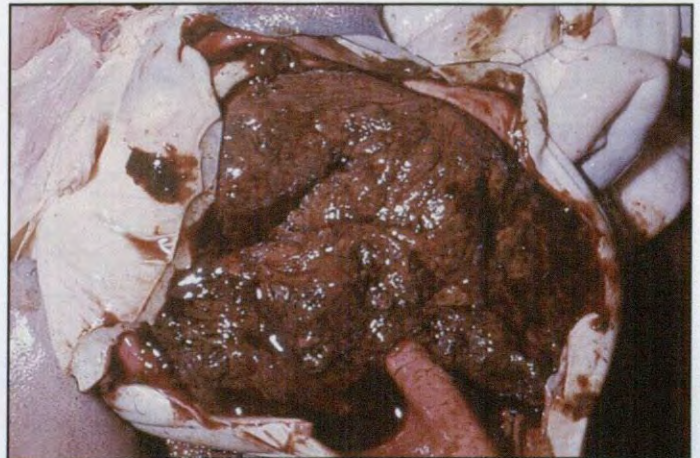
Source: PIADC



African Swine Fever

Pig, stomach. The hepatogastric lymph node is markedly enlarged and hemorrhagic, and the adjacent lesser omentum is edematous.

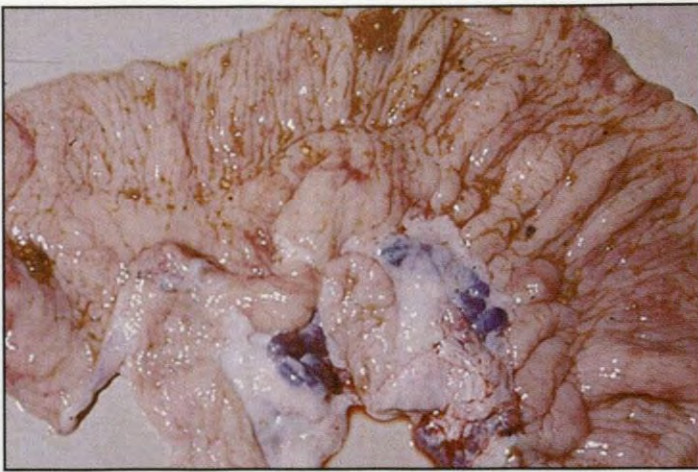
Source: PIADC



African Swine Fever

Pig, stomach. The stomach is filled with clotted blood, and the wall is markedly edematous.

Source: PIADC



African Swine Fever

Pig, cecum. Mucosa is markedly edematous and hyperemic, and lymph nodes are hemorrhagic.

Source: PIADC



Akabane

Bovine neonate. This live calf cannot stand due to severe arthrogryposis, primarily affecting the hindlimbs.

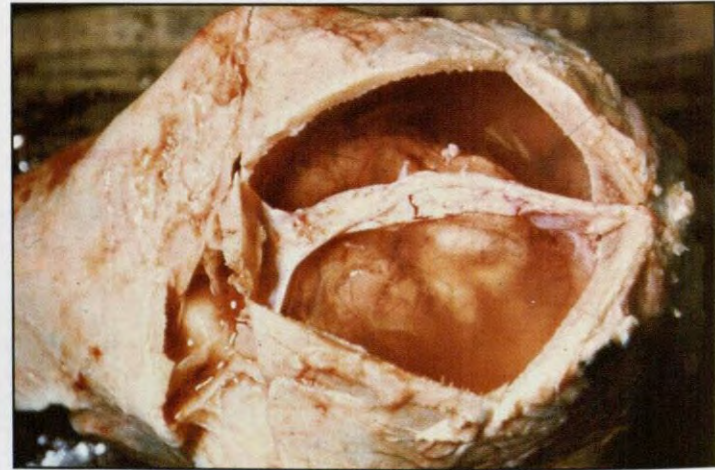
Source: Dr. P. Mansell, University of Melbourne



Akabane

Bovine neonate (Aino). This stillborn calf exhibits torticollis and arthrogryposis.

Source: Dr. K. Kawashima, National Institute of Animal Health, Japan



Akabane

Bovine neonate, brain. The entire brain is reduced in size (microencephaly), and surrounded by cerebrospinal fluid.

Source: Dr. K. Kawashima, National Institute for Animal Health, Japan



Anthrax

Bovine, lymph node. The node is hyperemic and contains multiple dark foci of hemorrhage.

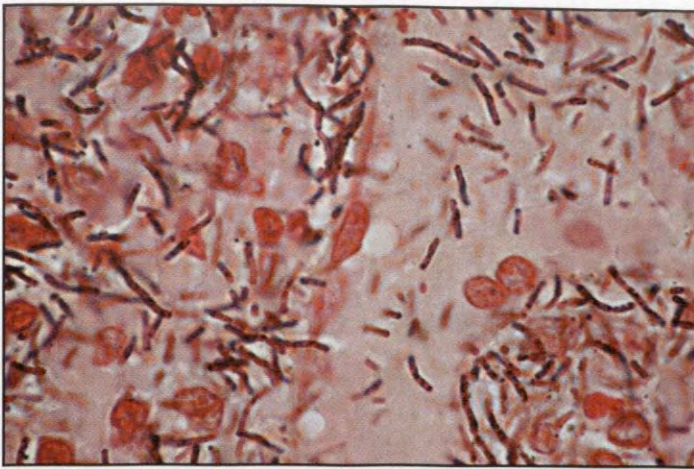
Source: AFIP



Anthrax

Human, skin. Lesions are raised and have necrotic centers.

Source: AFIP



Anthrax

Bacillus anthracis is a large, blunt- to square-ended bacterial rod that forms short chains.

Source: ISU CVM



Aujeszky's Disease/Pseudorabies

Pig, head. The mucosal membranes around the eye and nares are crusted, and the eye has periorbital serous exudate.

Source: AFIP



Avian Influenza

Chicken, head. The comb and wattles are congested and markedly edematous.

Source: Dr. D. Swayne, USDA



Avian Influenza

Chicken, shanks. The shanks are swollen (edema) and extensively reddened (hemorrhage).

Source: Dr. D. Swayne, USDA



Avian Influenza

Chicken, heart. There are numerous epicardial petechiae.

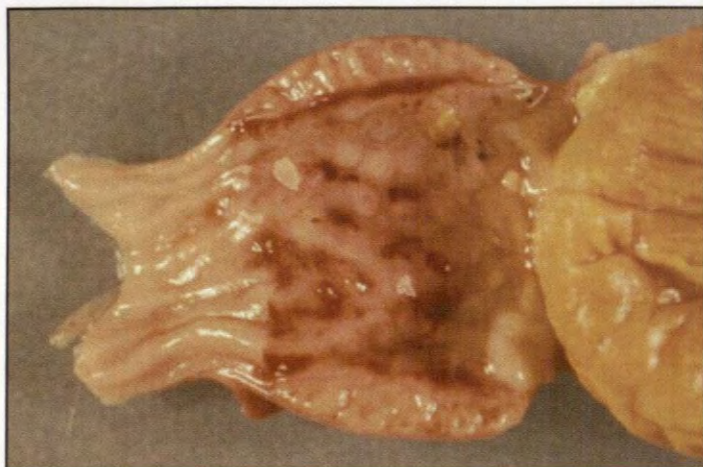
Source: Dr. D. Swayne, USDA



Avian Influenza

Chicken, lung. The lung is diffusely reddened, wet, and swollen (congestion and edema).

Source: Dr. D. Swayne, USDA



Avian Influenza

Chicken, proventriculus. There are multiple hemorrhages on the mucosal surface of the proventriculus.

Source: Dr. D. Swayne, USDA



Avian Influenza

Chicken, intestine. There are serosal hemorrhages over the Peyer's patches.

Source: Dr. D. Swayne, USDA



Baylisascariasis

Raccoon, feces. *Baylisascaris procyonis* eggs are typical ascarid eggs with thick, finely pitted shells; slightly smaller than *Toxocara canis* eggs.

Source: PIADC



Baylisascariasis

Raccoon, intestine. A partially opened small intestine contains many adult *B. procyonis*.

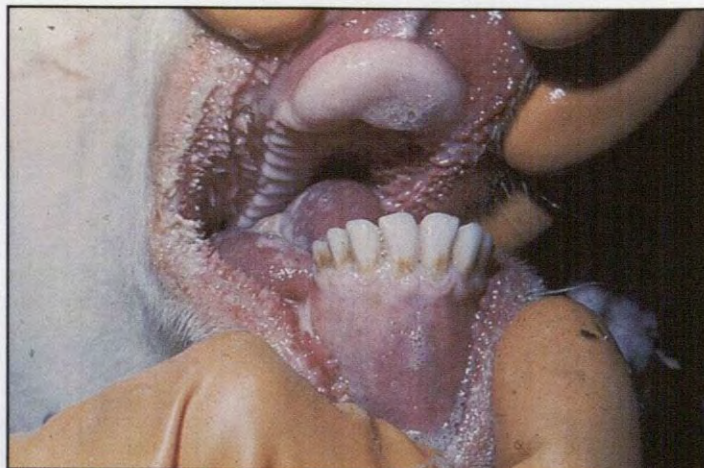
Source: Dr. A. Hamir, ARS, USDA



Bluetongue

Sheep. There is bilateral nasal exudate, erosion of the nasal planum, and excessive salivation.

Source: PIADC



Bluetongue

Sheep, mouth. There is linear erosion and reddening of the right buccal mucosa.

Source: PIADC



Bluetongue

Bovine. The muzzle is covered by an adherent crust, and the underlying (eroded) tissue is hyperemic.

Source: PIADC



Bluetongue

Sheep, mouth. Most of the dental pad is eroded; the remaining pale mucosa is necrotic.

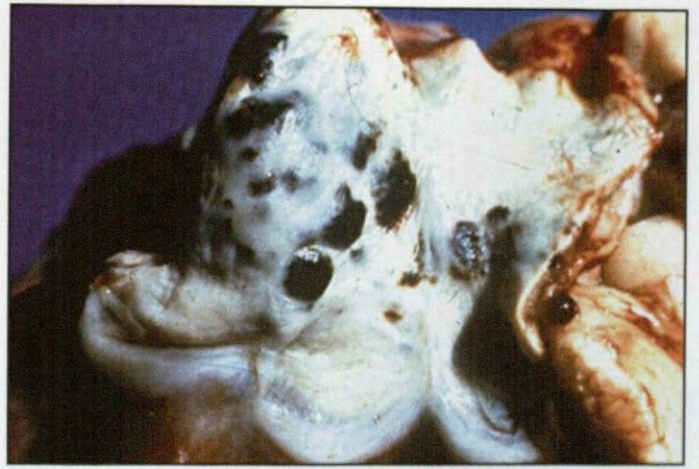
Source: AFIP



Bluetongue

Bovine, mammary gland. There is extensive coalescing ulceration of the teat skin.

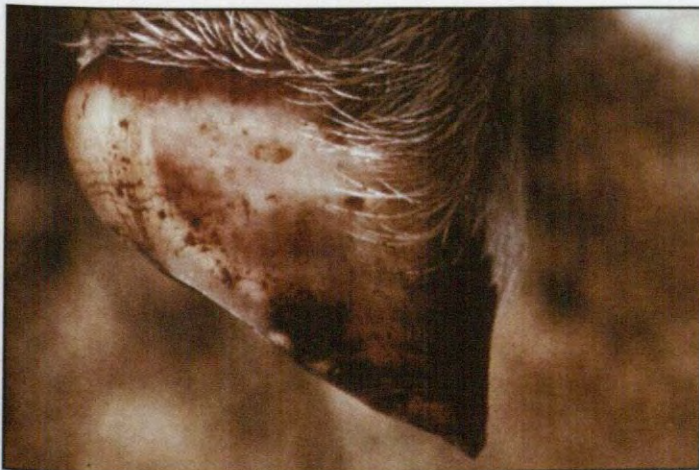
Source: PIADC



Bluetongue

Sheep, pulmonary artery. There are multiple ecchymoses on the intimal surface.

Source: AFIP



Bluetongue

Sheep, foot. There are multiple petechiae in the hoof wall, and there is marked hyperemia of the coronary band.

Source: AFIP



Bluetongue

Sheep, tongue. The lateral mucosa contains several ulcers that are covered by exudate and surrounded by zones of hyperemia.

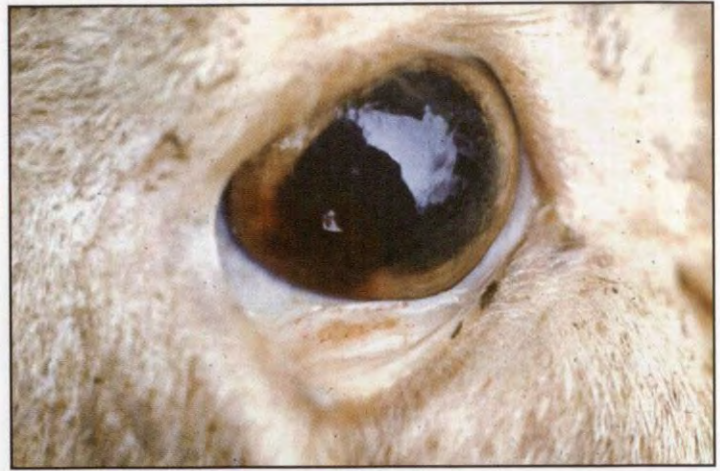
Source: PIADC



Bluetongue

Sheep, skeletal muscle. There is a focus of hemorrhage on the tendons. Pale areas are consistent with myodegeneration.

Source: AFIP



Bluetongue

Sheep, eye. There are foci of bulbar and palpebral conjunctival hemorrhage.

Source: AFIP



Bluetongue

Sheep, tongue. There are disseminated mucosal petechiae, and a single large vesicle on the tip.

Source: AFIP



Bluetongue

Sheep, rumen. There are multiple mucosal hemorrhages centered on the pillars.

Source: AFIP



Bluetongue

Sheep, fetuses. The larger of these aborted macerated fetuses exhibits torticollis.

Source: PIADC



Botulism

Mink. Flaccid paralysis characteristic of botulism.

Source: AFIP



Botulism

Duck. Flaccid paralysis characteristic of botulism.

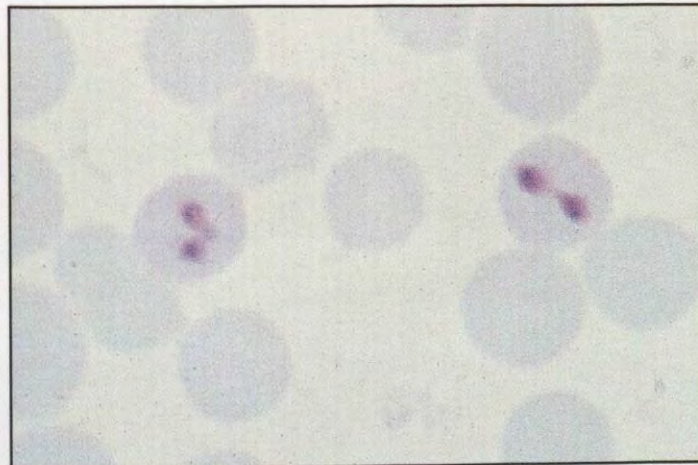
Source: AFIP



Bovine Babesiosis

Bovine, brain. The cerebral cortex is diffusely reddened ("cerebral flush").

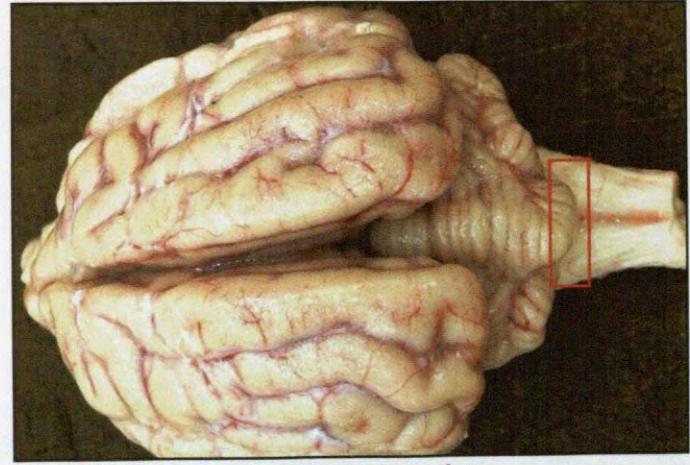
Source: AFIP



Bovine Babesiosis

Bovine, blood smear. Two erythrocytes contain pairs of ovoid *Babesia bovis*.

Source: AFIP



Bovine Spongiform Encephalopathy

Brain. The red box indicates the region of the obex, the portion of the brainstem that is required for BSE diagnosis.

Source: Dr. S. Sorden, ISU CVM, VPTH



Bovine Tuberculosis

Elk, lung and lymph node. Lung contains multiple coalescing foci of caseous necrosis surrounded by thin pale fibrous tissue capsules (tubercles).

Source: Dr. G. Wobeser, CCWHC



Bovine Tuberculosis

Bovine, lung. Lung parenchyma is almost entirely replaced by variably-sized, coalescing, raised pale nodules.

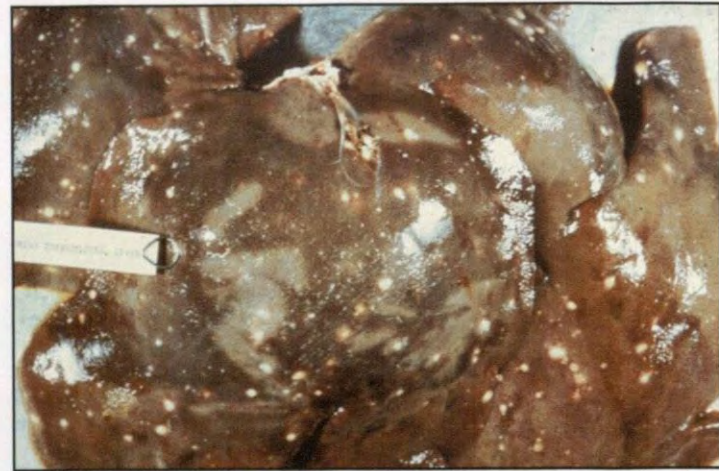
Source: AFIP



Bovine Tuberculosis

Pig, tracheobronchial lymph nodes. The center of the sectioned node is replaced by caseous, mineralized debris.

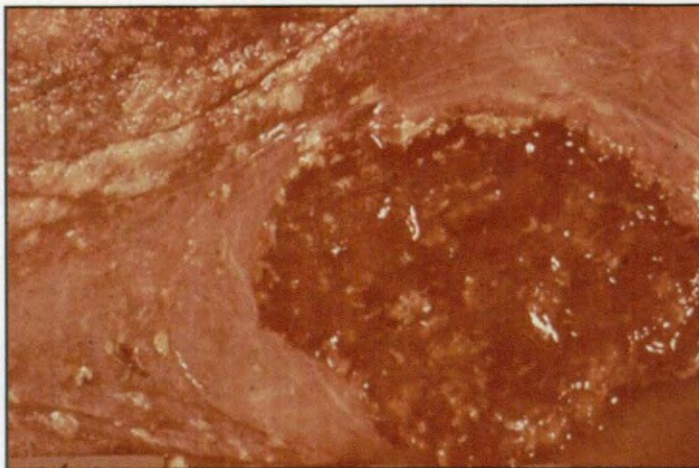
Source: AFIP



Bovine Tuberculosis

Pig, liver. Pale, slightly raised granulomas are disseminated throughout all liver lobes.

Source: AFIP



Brucellosis

Bovine, placenta. Numerous pale clumps of exudate are scattered over the cotyledon and adjacent chorion.

Source: AFIP



Brucellosis

Bovine, vertebrae. Purulent exudate within a vertebra extends into the adjacent spinal canal.

Source: AFIP



Brucellosis

Caribou, carpus, *B. suis* biovar 4. The carpal bursa is markedly swollen and fluctuant.

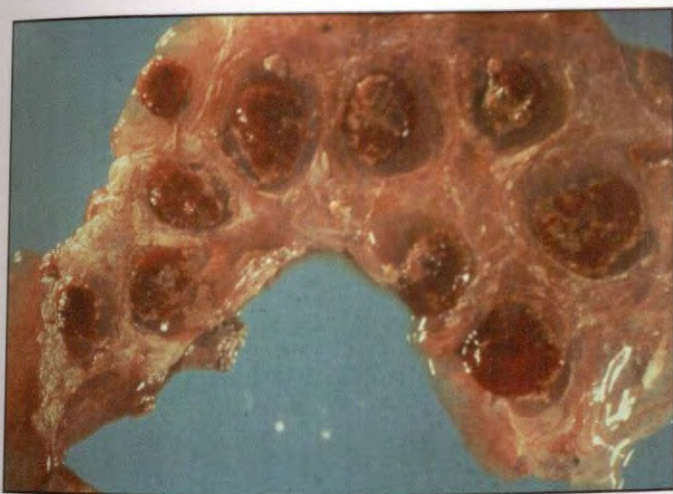
Source: Dr. G. Wobeser, CCWHC



Brucellosis

Caribou, carpus, *B. suis* biovar 4. The carpal bursa contains purulent exudate.

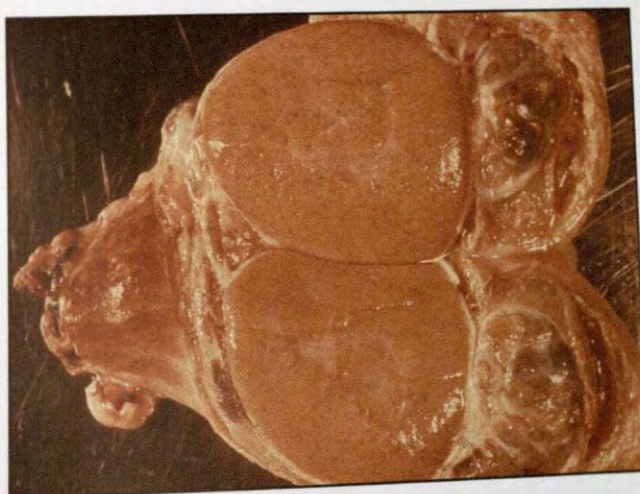
Source: Dr. G. Wobeser, CCWHC



Brucellosis

Bovine, placenta. The placenta contains numerous hemorrhagic cotyledons.

Source: AFIP



Brucellosis

Sheep, testis (bisected). The epididymis is markedly enlarged and contains bands of fibrous tissue (chronic epididymitis). In this case, the testis itself is relatively unaffected.

Source: AFIP



Chlamydiosis, avian

Avian, liver. Sheets of fibrinous exudate partially cover the capsular surface of the liver.

Source: AFIP



Chlamydiosis, mammalian

Koala, eye. Reddened conjunctiva with a focal erosion and serous exudate.

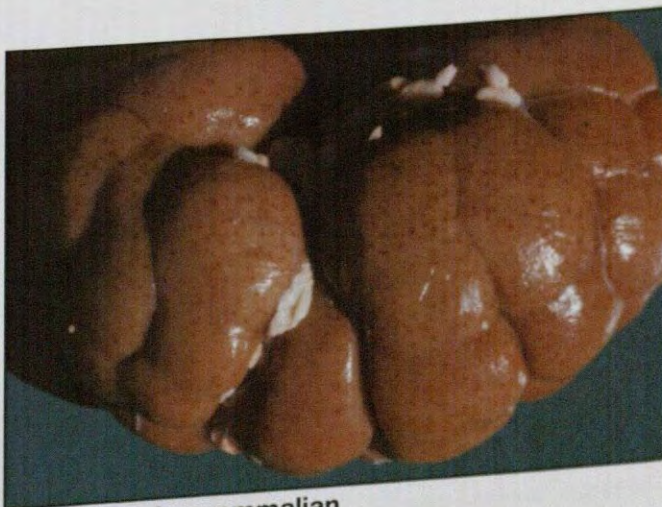
Source: AFIP



Chlamydiosis, mammalian

Bovine, skin, fetus. Ulcerated reddened foci on the skin of an aborted fetus due to *Chlamydia psittaci*.

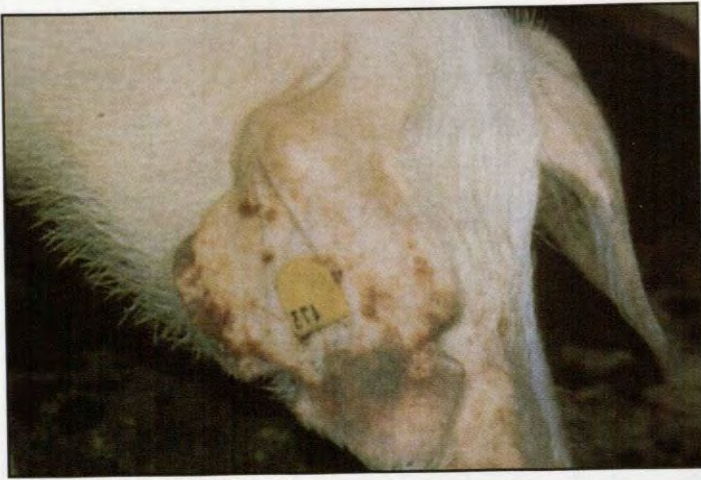
Source: AFIP



Chlamydiosis, mammalian

Bovine, kidney. Diffuse petechial hemorrhages are present in the kidney.

Source: AFIP



Classical Swine Fever

Pig. The distal pinnae contain coalescing dark red foci of hemorrhage and necrosis (infarction).

Source: USDA



Classical Swine Fever

Pig, kidney. The cortex contains multiple petechiae and pale infarcts surrounded by hemorrhage.

Source: PIADC



Classical Swine Fever

Pig, kidney. There are numerous disseminated cortical petechiae ("turkey egg kidney").

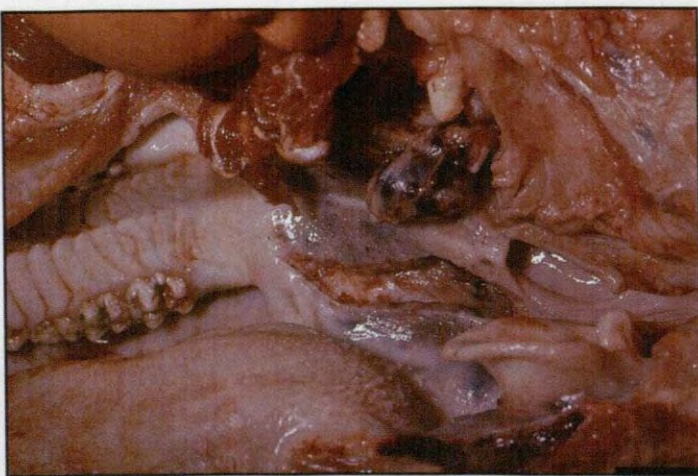
Source: PIADC



Classical Swine Fever

Pig, kidney. The cortex contains disseminated petechiae. Calyces are moderately dilated (hydronephrosis) and contain hemorrhages.

Source: PIADC



Classical Swine Fever

Pig, retropharyngeal lymph node. The lymph node is markedly enlarged and hemorrhagic; the tonsil contains multiple poorly demarcated hemorrhages.

Source: PIADC



Classical Swine Fever

Pig, colon. The mucosa is reddened and contains multiple discrete ('button') ulcers surrounded by zones of hemorrhage

Source: Dr. R. Panciera, Noah's Arkive, Oklahoma State University



Classical Swine Fever

Pig, inguinal lymph node. There are petechial and peripheral (medullary sinus) hemorrhages.

Source: PIADC



Classical Swine Fever

Pig, pharynx and larynx. There are coalescing foci of petechial hemorrhage (and necrosis) in the palatine tonsils and adjacent pharyngeal and laryngeal mucosa.

Source: Dr. W. Wajjwalku, Kasetsart University, Thailand



Classical Swine Fever

Pig, lungs. There are numerous disseminated pleural petechiae, and there is mild interlobular edema.

Source: PIADC



Classical Swine Fever

Pig, spleen. There are multiple coalescing, swollen dark red infarcts along the margins.

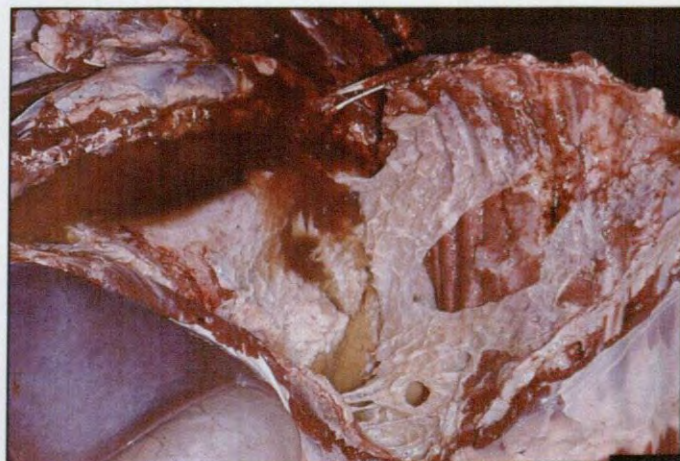
Source: Dr. D. Gregg, Noah's Arkive, PIADC



Contagious Bovine Pleuropneumonia

Bovine, lung. Most of the pleural surface is covered by abundant fibrin and fibrous tissue.

Source: PIADC



Contagious Bovine Pleuropneumonia

Bovine, pleural cavity. Large sheets of fibrin cover the costal and diaphragmatic pleura, and form pockets containing straw-colored fluid.

Source: PIADC



Contagious Bovine Pleuropneumonia

Bovine, pleural cavity. There is a thick plaque (adhesion) of fibrous tissue on the costal pleura.

Source: PIADC



Contagious Bovine Pleuropneumonia

Bovine, lung. Most of the parenchyma is dull and tan (necrotic); partially surrounded by a fibrous capsule, this necrotic zone is termed a sequestrum.

Source: PIADC



Contagious Bovine Pleuropneumonia

Bovine, lung. Interlobular septa are markedly thickened by fibrous tissue, and also contain small depressions (air pockets = emphysema).

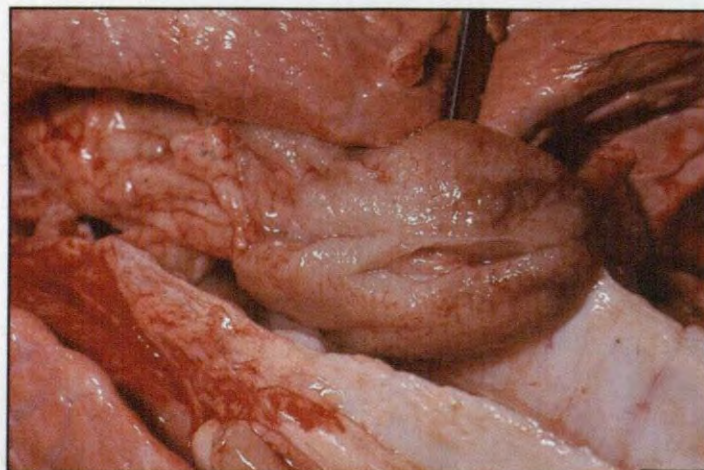
Source: PIADC



Contagious Bovine Pleuropneumonia

Bovine, lung. In the ventral portion of this lung (left side of the image), interlobular septa and the pleura are markedly thickened with fibrous tissue.

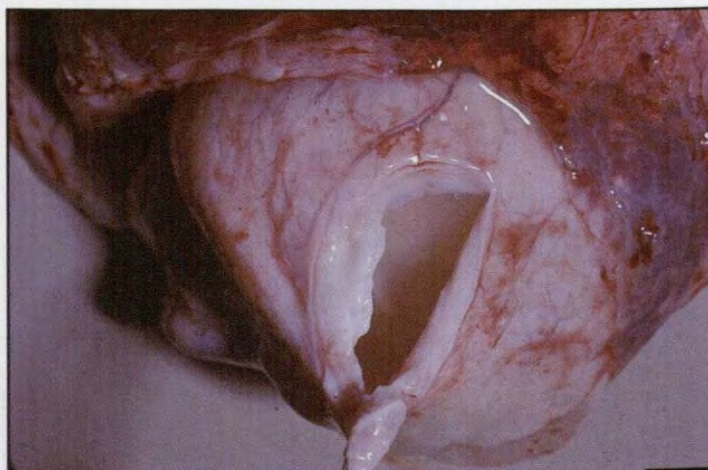
Source: PIADC



Contagious Bovine Pleuropneumonia

Bovine, tracheobronchial lymph node. This bisected node is enlarged (hyperplasia) and contains a focal area of hemorrhage.

Source: PIADC



Contagious Bovine Pleuropneumonia

Bovine, heart. The pericardial wall is markedly thickened and the pericardial sac contains abundant pale tan, turbid fluid.

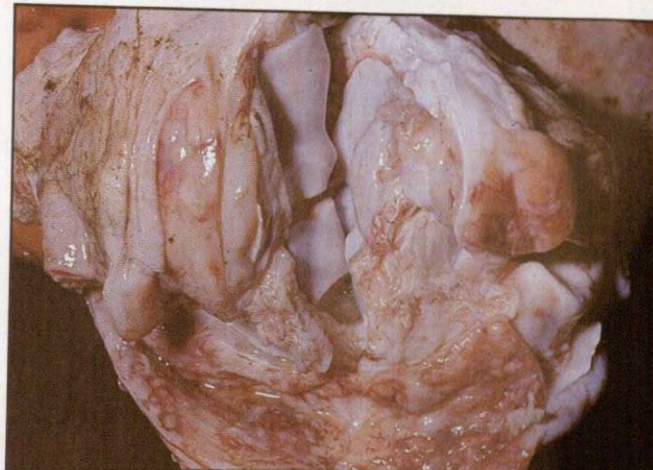
Source: PIADC



Contagious Bovine Pleuropneumonia

Bovine, heart. The pericardial sac is distended with abundant turbid, tan fluid, and abundant fibrin coats the pericardial surfaces.

Source: PIADC



Contagious Bovine Pleuropneumonia

Bovine, carpus. The joint capsule and extensor tendon sheath are thickened and contain excessive fluid.

Source: PIADC



Contagious Equine Metritis

Horse, vulva. Mucopurulent exudate drains from the vulva.

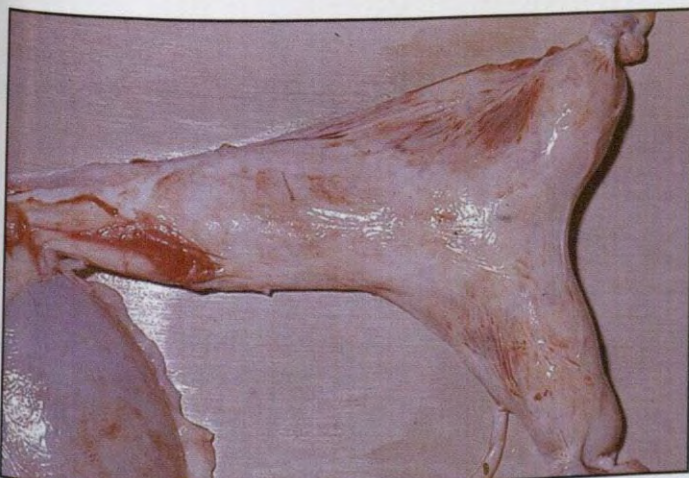
Source: PIADC



Contagious Equine Metritis

Horse, vagina. There is straw-colored fluid within the cranial vagina.

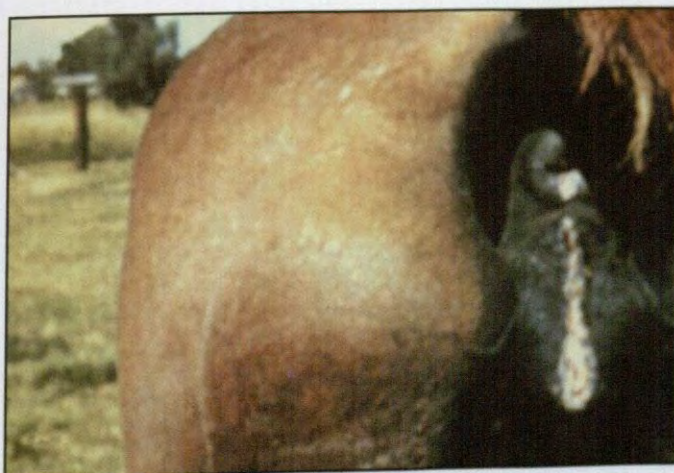
Source: PIADC



Contagious Equine Metritis

Horse, uterus. The uterine horns and body are mildly distended (with mucopurulent exudate).

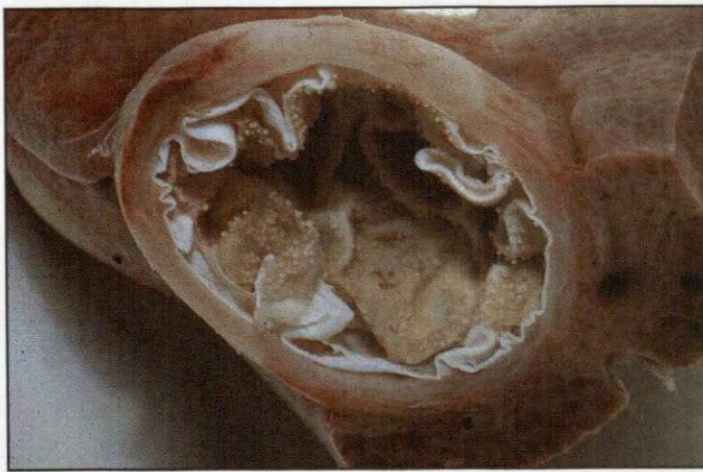
Source: PIADC



Dourine

Horse, rump. Vulvar thickening and edema, often gelatinous, due to *Trypanosoma equiperdum*.

Source: AFIP



Echinococcosis

Liver. Cross-section of cyst due to echinococcosis.
Source: ISU CVM, VPTH



Echinococcosis

Skunk, liver. The inner surface of the cyst is lined by hydatid sand and surrounded by a thick capsule of fibrous connective tissue.
Source: ISU, CVM



Echinococcosis

Human, liver. Multiple thin-walled hydatid cysts project from the capsular surface of the liver.
Source: AFIP



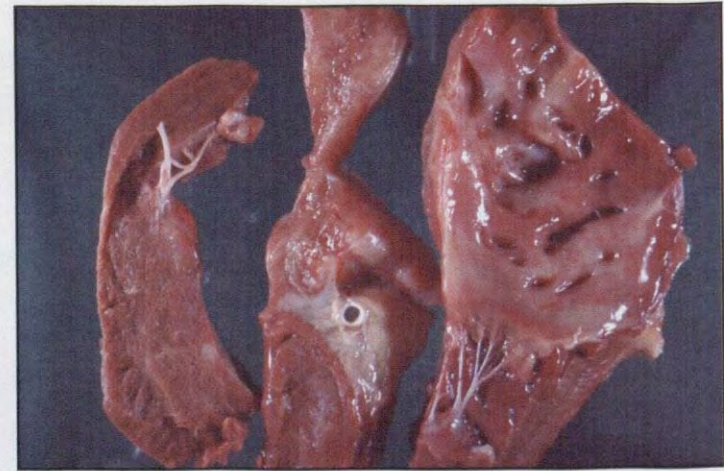
Enterohemorrhagic *Escherichia coli*

Canine, small intestine. hemorrhagic enteritis due to *E. coli* 0157:H7.
Source: AFIP



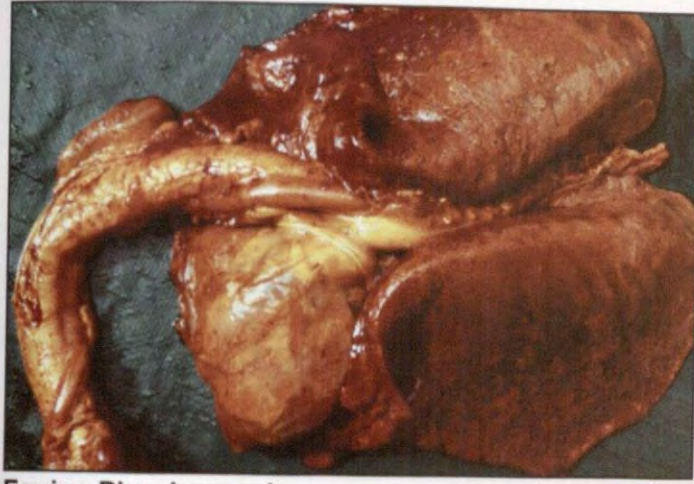
Epizootic Lymphangitis

Horse, skin. The thoracic (brisket area) skin and subcutaneous tissue are thickened with purulent foci (abscesses).
Source: AFIP



Equine Infectious Anemia

Horse, heart. Pale cardiac muscle, focal white areas of myocardial degeneration, and reddened hemorrhagic areas (possible hypoxia during death).
Source: ISU CVM



Equine Piroplasmosis

Horse, heart and lungs. The trachea and pericardial fat are icteric. Lungs are irregularly congested with consolidation of the right cranioventral lung.
Source: AFIP



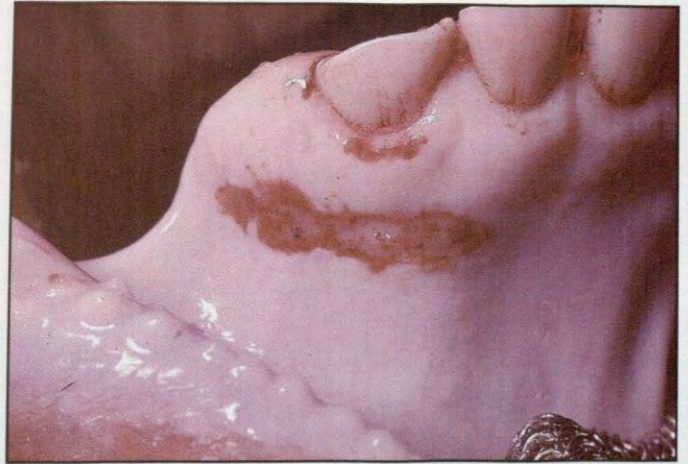
Equine Piroplasmosis

Horse, kidney. The cortex is dark red due to hemoglobinemia; medulla and pelvis are icteric.
Source: AFIP



Equine Viral Arteritis

Horse scrotum. Scrotal edema occurring in equine viral arteritis.
Source: Dr. R.C. Giles, University of Kentucky, Noah's Arkive



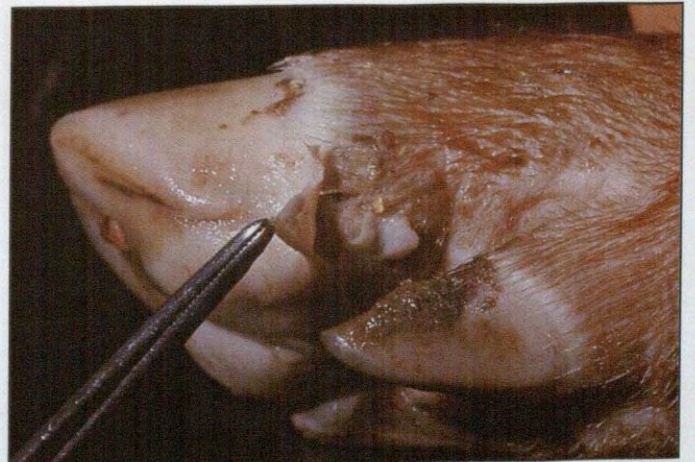
Foot and Mouth Disease

Bovine, gingiva. There is an elongate erosion (ruptured vesicle) ventral to the incisors.
Source: PIADC



Foot and Mouth Disease

Goat, oral mucosa. There is a large erosion (ruptured vesicle) on the rostral mandibular buccal mucosa.
Source: PIADC



Foot and Mouth Disease

Pig, foot. There is a ruptured vesicle on the caudal-lateral coronary band, with undermining of the heel.
Source: PIADC



Foot and Mouth Disease

Pig, foot. A ruptured vesicle of the coronary band extends into the interdigital skin.

Source: PIADC



Foot and Mouth Disease

Pig, foot. There is an intact vesicle on the caudal coronary band of the left claw, and a cleft (ruptured vesicle) on the heel bulb of the right claw.

Source: PIADC



Foot and Mouth Disease

Bovine, muzzle. Within the naris, the ventromedial mucosa contains an intact vesicle.

Source: PIADC



Foot and Mouth Disease

Bovine, tongue. There are multiple large mucosal erosions and ulcers.

Source: PIADC



Foot and Mouth Disease

Pig, foot. Large clefts at the coronary bands precede sloughing of the claws.

Source: Dr. D. Gregg, Noah's Arkive, PIADC



Foot and Mouth Disease

Pig, tongue. Many ("dry") vesicles are ruptured and lack fluid.

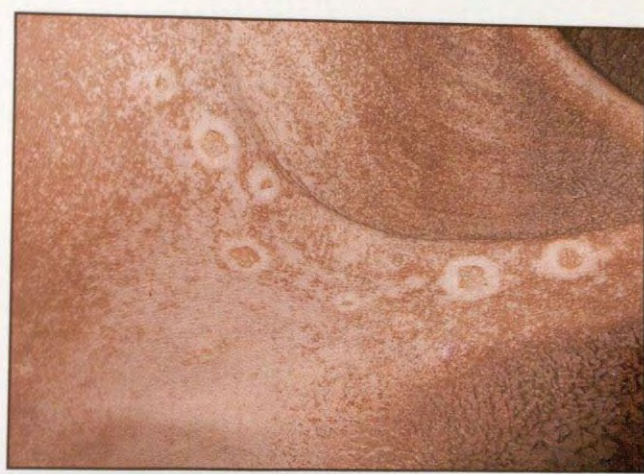
Source: Foreign Animal Diseases "The Grey Book" USAHA



Foot and Mouth Disease

Rumen mucosa, higher magnification. There are several irregularly shaped erosions (ruptured vesicles) on the pillar.

Source: PIADC



Foot and Mouth Disease

Rumen mucosa, dorsal sac, low magnification. There are several erosions (ruptured vesicles) on the pillars. The pale margins are undermined epithelium.

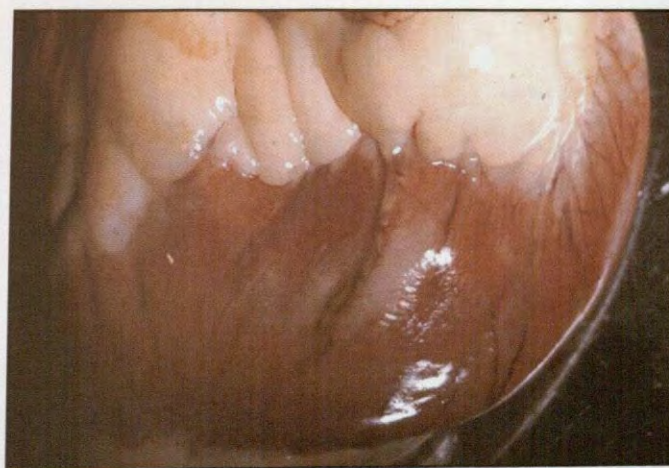
Source: PIADC



Foot and Mouth Disease

Bovine, teat. There is a ruptured vesicle on the end of the teat.

Source: PIADC



Foot and Mouth Disease

Sheep, heart. There is a pale area of myocardial necrosis visible from the epicardial surface.

Source: Dr. D. Gregg, Noah's Arkive, PIADC



Fowl Typhoid and Pullorum Disease

Avian liver, spleen. Liver is pale with diffuse yellow-brown (bronze) discoloration; splenic congestion and enlargement.

Source: Dr. Andreasen, CVM



Fowl Typhoid and Pullorum Disease

Avian, abdominal cavity. Liver with focal pale edges (top of abdominal cavity) and enlarged, rounded spleen with white pin-point multifocal lesions due to *Salmonella gallinarum*.

Source: AFIP



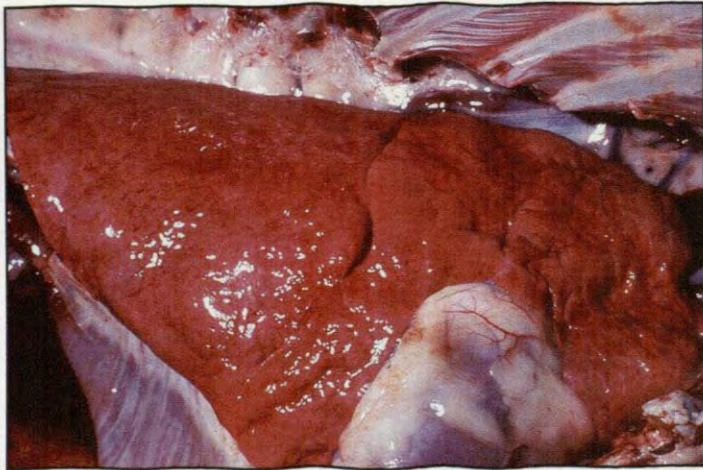
Glanders

Human, skin. There is extensive ulceration and sloughing of the skin of the forearm and hand. Ulcers may be connected by lymphatic vessels ("Farcy pipes") full of thick purulent exudate.
Source: AFIP



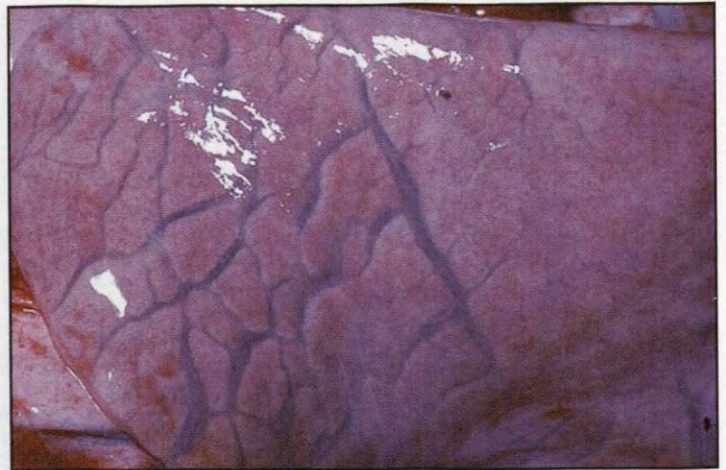
Heartwater

Goat. The neck is extended, consistent with dyspnea.
Source: PIADC



Heartwater

Goat, thoracic viscera. There are many pleural hemorrhages, and the lung is moderately noncollapsed (edema).
Source: PIADC



Heartwater

Sheep, lung. There is severe interlobular edema.
Source: PIADC



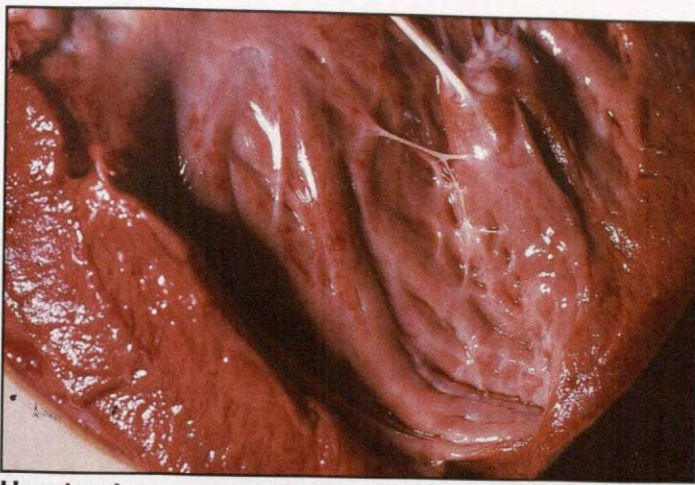
Heartwater

Sheep, lung. Interlobular septa are distended with edema fluid.
Source: PIADC



Heartwater

Sheep, lung. The lung is noncollapsed and hyperemic, and the bronchi contain frothy fluid (pulmonary edema).
Source: PIADC



Heartwater

Goat, heart. There are many small hemorrhages on the endocardial surface.

Source: PIADC



Heartwater

Sheep, kidney. Section reveals numerous fine linear radial hemorrhages; hemorrhages coalesce in the papillae.

Source: PIADC



Heartwater

Goat, precapsular lymph node. There are multiple barely discernable petechiae in the cortex.

Source: PIADC



Heartwater

Goat, abomasum. There are multiple petechial and paintbrush serosal hemorrhages.

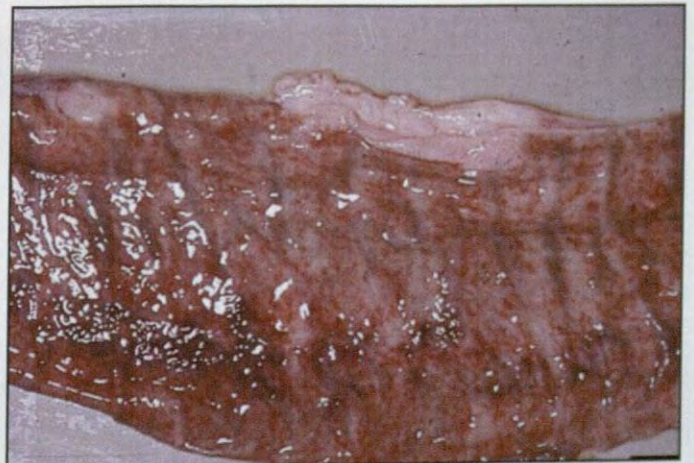
Source: PIADC



Heartwater

Small ruminant, abomasum. The mucosa contains disseminated petechial and coalescing ecchymotic hemorrhages.

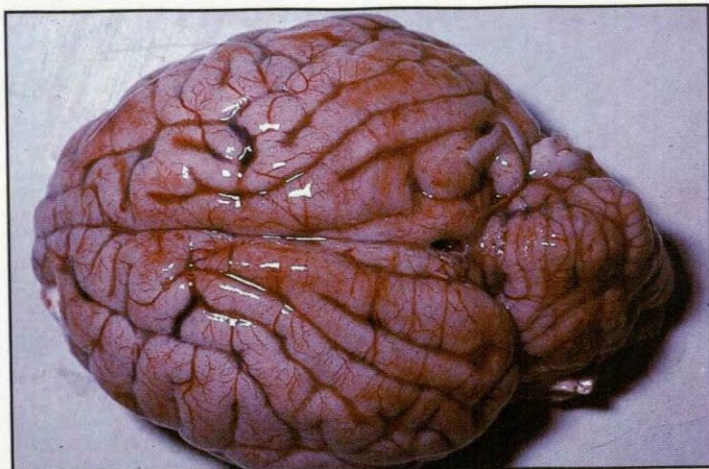
Source: PIADC



Heartwater

Small ruminant, small intestine. The mucosa contains numerous petechiae and ecchymoses.

Source: PIADC



Heartwater

Sheep, brain. The leptomeninges are congested and contain many small hemorrhages. Gyri are flattened (cerebral edema).

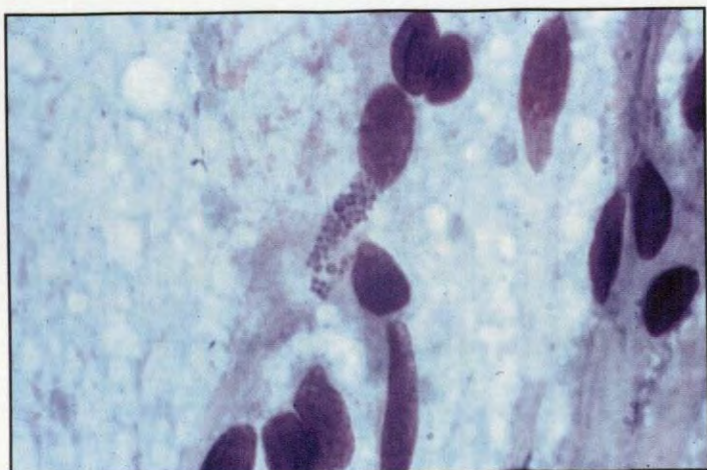
Source: PIADC



Heartwater

Goat, brain. The cerebrum contains multiple petechiae and a few ecchymoses. The swollen, hemorrhagic choroid plexus protrudes from the lateral ventricle.

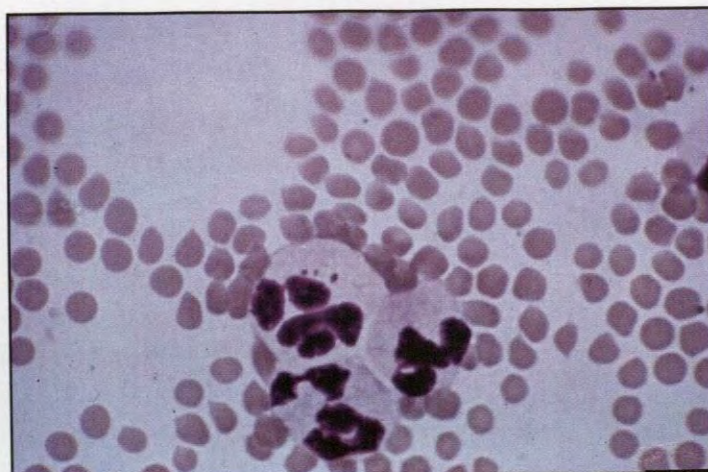
Source: PIADC



Heartwater

Goat, brain smear. An endothelial cell contains a morula (cluster) of *Ehrlichia ruminantium*.

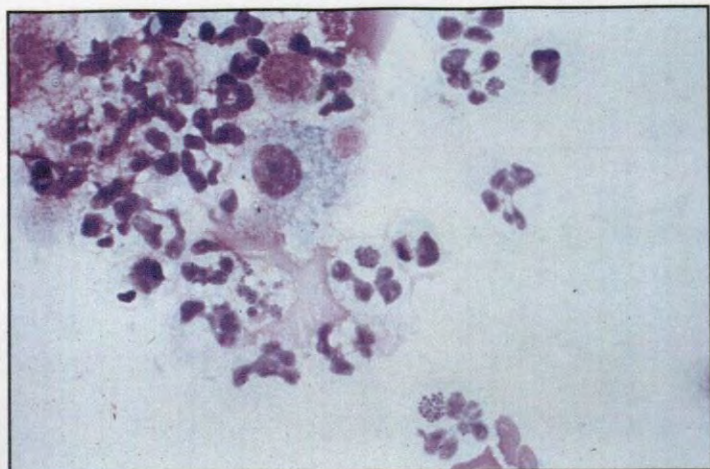
Source: PIADC



Heartwater

Goat, peripheral blood smear. A neutrophil contains a few *Ehrlichia ruminantium*.

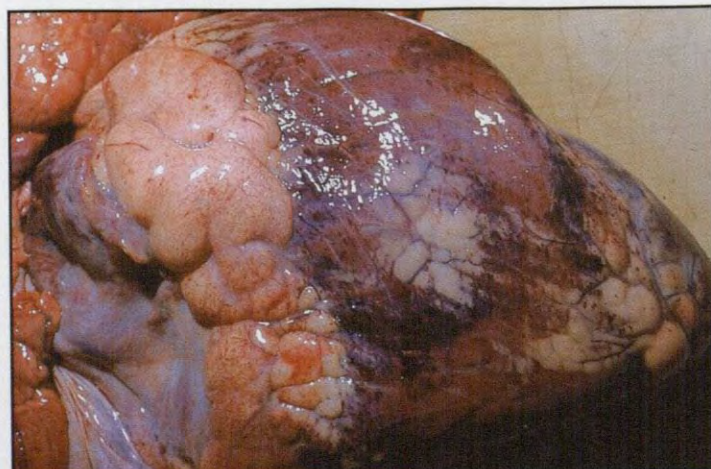
Source: PIADC



Heartwater

Goat, buffy coat smear. Several neutrophils contain *E. ruminantium* morulae.

Source: PIADC



Hemorrhagic Septicemia

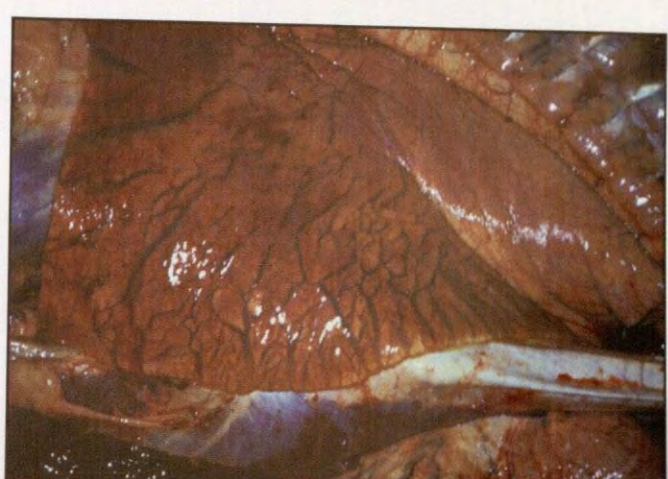
Bovine, heart. There are numerous often coalescing petechiae on the epicardium.

Source: PIADC



Hemorrhagic Septicemia

Bovine, submandibular region. There is severe subcutaneous/fascial edema and multifocal hemorrhage. The parotid gland exhibits interlobular edema.
Source: PIADC



Hendra

Horse, lung. There is severe interlobular edema.
Source: Dr. M. Williamson, CSIRO, Australia



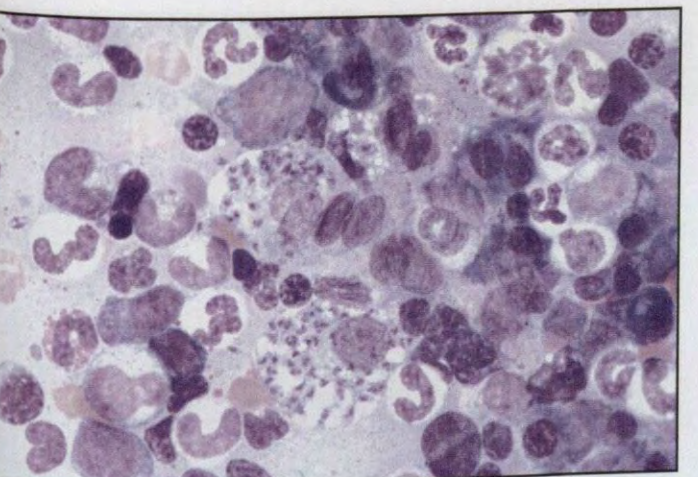
Influenza

Pig, lungs. There is diffuse tan consolidation of cranial lobes, and multifocal lobular consolidation of the caudal lobes.
Source: Dr. B. Janke, ISU CVM, VDL



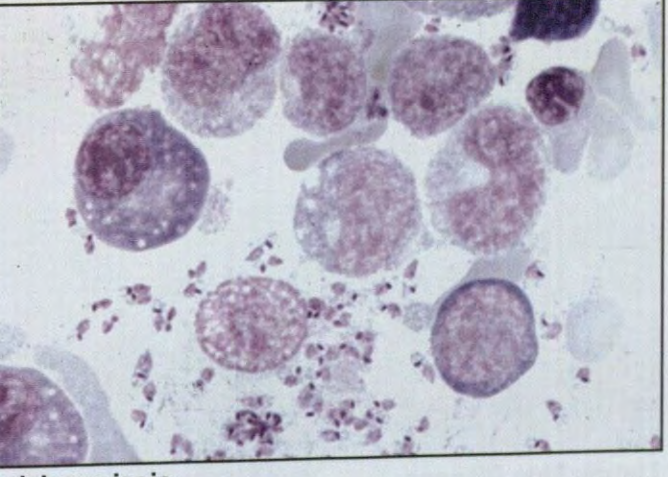
Japanese Encephalitis

Pig, fetuses. The litter consists of five large (full-term) stillborn fetuses and two small mummified fetuses.
Source: Dr. K. Kawashima, Central Livestock Hygiene Service Center Saitama pref., Japan



Leishmaniasis

Dog, bone marrow. The bone marrow contains hematopoietic precursors and macrophages with numerous intracytoplasmic *Leishmania* sp.
Source: Dr. C. Andreasen, ISU CVM, VPTH



Leishmaniasis

Dog, bone marrow. Higher magnification of bone marrow demonstrating intracellular and extracellular *Leishmania* sp.
Source: Dr. C. Andreasen, ISU CVM, VPTH



Louping Ill

Sheep. Sheep with neurologic deficits that is unable to stand.
Source: AFIP



Lumpy Skin Disease

Bovine, skin. There are disseminated cutaneous papules with necrotic centers (sitfasts).
Source: Noah's Arkive, PIADC



Lumpy Skin Disease

Bovine, skin. There is hemorrhagic exudate subjacent to the necrotic center (sitfast) of a papule.
Source: Noah's Arkive, PIADC



Lumpy Skin Disease

Bovine, skin. Multiple subcutaneous nodules elevate the skin.
Source: PIADC



Lumpy Skin Disease

Bovine, muzzle. There are multiple sharply-demarcated slightly raised papules, often with eroded surfaces, that extend into the nares.
Source: Noah's Arkive, PIADC



Lumpy Skin Disease

Bovine, nasal turbinate. Early pox lesions are slightly pale round foci rimmed by petechiae.
Source: PIADC



Lumpy Skin Disease

Bovine, nasal turbinate. The centers of well-developed pox are necrotic.

Source: PIADC



Lumpy Skin Disease

Bovine, trachea. The mucosa contains a poorly demarcated round focus rimmed by mild hemorrhage (early pox lesion).

Source: PIADC



Lumpy Skin Disease

Bovine, lung. There is marked generalized interlobular edema, and there is a small cluster of red nodules on the left side of the specimen.

Source: Noah's Arkive, PIADC



Maedi-Visna

Sheep, lung. Lung fails to deflate and contains coalescing multifocal gray-white nodules/plaques (proliferative lymphocytes and pneumocytes) with adjacent atelectatic depressed parenchyma (red-pink).

Source: AFIP



Maedi-Visna

Sheep, lung. Lung fails to deflate with pale gray coalescing proliferative areas and cranioventral atelectasis (reddish area).

Source: AFIP



Malignant Catarrhal Fever

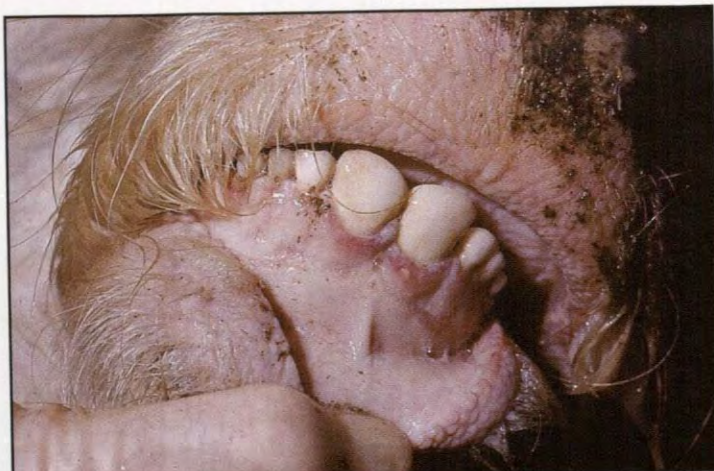
Bovine, muzzle. Multiple shallow erosions are filled with dried nasal exudate.

Source: PIADC



Malignant Catarrhal Fever

Bovine. There is diffuse superficial necrosis of the muzzle.
Source: PIADC



Malignant Catarrhal Fever

Bovine, oral mucosa. There is gingival hyperemia and focal erosion.
Source: PIADC



Malignant Catarrhal Fever

Bovine, hard palate. There are multiple coalescing mucosal erosions.
Source: PIADC



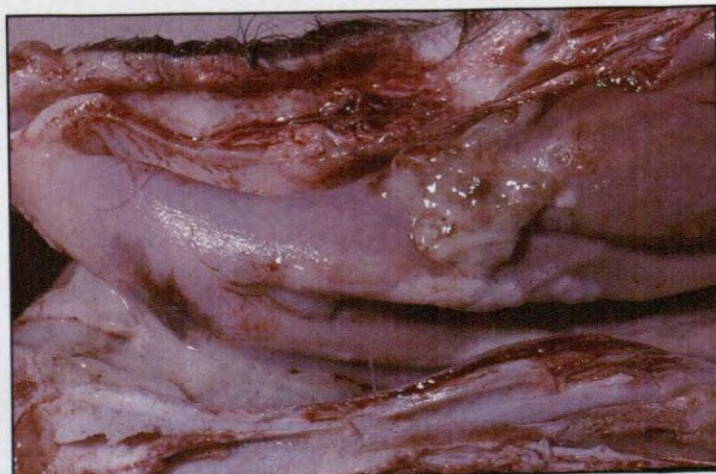
Malignant Catarrhal Fever

Bovine, skin. There are numerous raised plaques (multifocal dermatitis).
Source: PIADC



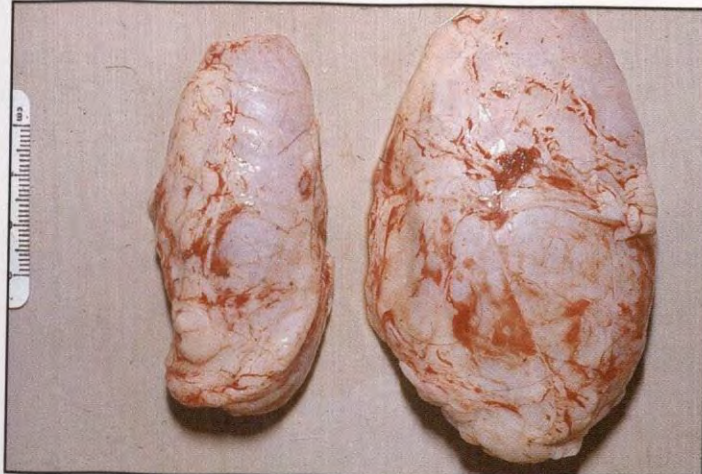
Malignant Catarrhal Fever

Bovine, head, sagittal section. Mucoid exudate multifocally covers the nasal and pharyngeal mucosa.
Source: PIADC



Malignant Catarrhal Fever

Bovine, nasal turbinate. There is a small amount of mucoid exudate.
Source: PIADC



Malignant Catarrhal Fever

Bovine, prescapular lymph nodes: Moderately (left) to markedly enlarged (right) due to MCF.

Source: PIADC



Malignant Catarrhal Fever

Bovine, prescapular lymph node. There are foci of hemorrhage (and necrosis) in the cortex, and the medulla is edematous.

Source: PIADC



Malignant Catarrhal Fever

Bovine, omasum. Omasal leaves contain multiple pale foci of necrosis; on the right there are several ulcers.

Source: PIADC



Malignant Catarrhal Fever

Bovine, cecum and ileum. There are scattered small foci of mucosal hemorrhage and erosion.

Source: PIADC



Malignant Catarrhal Fever

Bovine, spiral colon. There are multiple mucosal hemorrhages.

Source: PIADC



Malignant Catarrhal Fever

Bovine, colon. There is severe longitudinal linear congestion of the mucosa.

Source: PIADC



Malignant Catarrhal Fever

Bovine, kidney. Multiple pale foci in the cortex are foci of interstitial nephritis.

Source: PIADC



Malignant Catarrhal Fever

Bovine, urinary bladder. The mucosal surface contains several small erosions and one large hemorrhagic ulcer.

Source: PIADC



Melioidosis

Goat, nasal turbinates. There are multiple raised pale nodules (abscesses) on the nasal mucosa.

Source: Dr. K. Kawashima, National Institute of Animal Health, Japan



Monkeypox

Rhesus macaque, monkeypox. There are multiple hemorrhagic papules on the forehead and eyelids.

Source: AFIP



Monkeypox

Primate, hindlimb, monkeypox. There are numerous discrete papules with red, depressed centers.

Source: AFIP



Mycoplasmosis, Avian

Turkey, head. Purulent sinusitis.

Source: Dr. N. Cheville, ISU CVM.



Newcastle Disease

Chicken, comb. The comb is markedly edematous and contains multiple foci of hemorrhage.

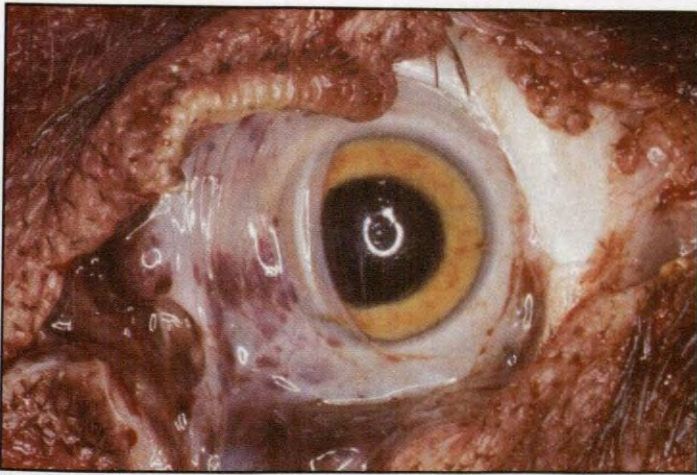
Source: PIADC



Newcastle Disease

Chicken. There is a marked hemorrhage of the comb, wattle, and adjacent skin.

Source: AFIP



Newcastle Disease

Chicken, eye. Conjunctival hemorrhage is most severe in the nictitans.

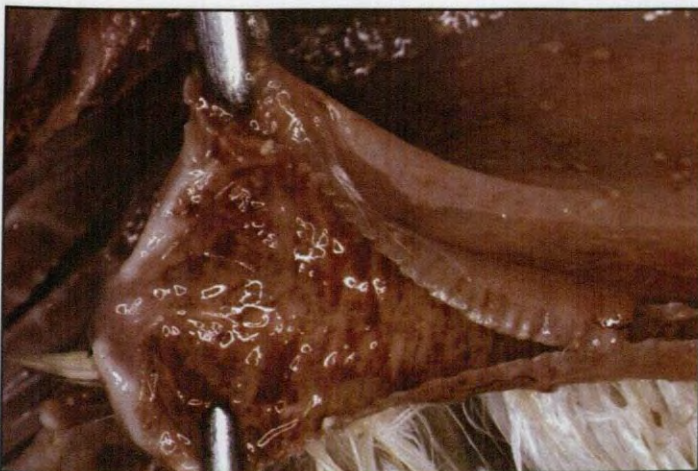
Source: CAHFSLS



Newcastle Disease

Chicken, oral cavity. Numerous clumps of fibrinonecrotic exudate adhere to foci of necrosis in the oral, pharyngeal, and esophageal mucosa.

Source: CAHFSLS



Newcastle Disease

Chicken, trachea. Tracheal and laryngeal mucosa contain many foci of hemorrhage and small clumps of fibrinonecrotic exudate.

Source: CAHFSLS



Newcastle Disease

Chicken, subcutis. There is marked subcutaneous edema in the neck, extending to the thoracic inlet.

Source: CAHFSLS



Newcastle Disease

Chicken, ceca. Hyperemic, necrotic cecal tonsils are visible from the serosal surface.

Source: CAHFSLS



Newcastle Disease

Chicken, ceca. The cecal tonsil is red-brown, thickened, and friable (necrotic).

Source: CAHFSLS



Newcastle Disease

Chicken, rectum. There are multiple linear mucosal hemorrhages.

Source: CAHFSLS



Newcastle Disease

Chicken, colon. The mucosa contains multiple sharply demarcated foci of hemorrhage and necrosis.

Source: CAHFSLS



Newcastle Disease

Chicken, proventriculus. The proximal mucosa is eroded and covered by a fibrinonecrotic (diphtheritic) membrane.

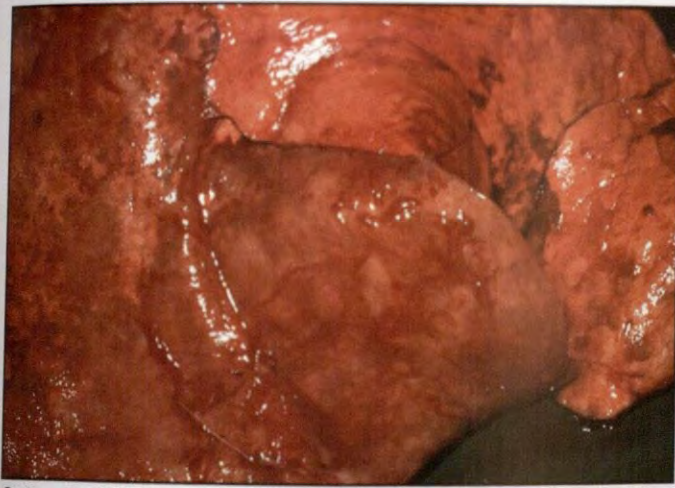
Source: CAHFSLS



Newcastle Disease

Chicken, cecal tonsil necrosis.

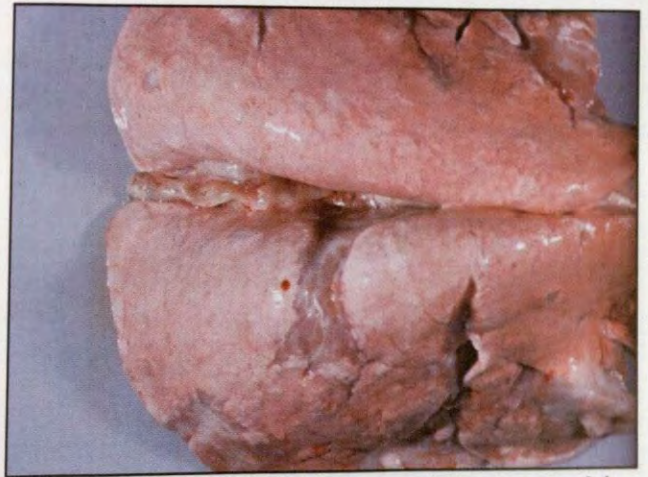
Source: CAHFSLS



Ovine Pulmonary Adenocarcinoma (Adenomatosis)

Sheep, lung. The lungs fail to deflate and are mottled with coalescing to diffuse proliferative areas (pale pink) with red areas of atelectasis.

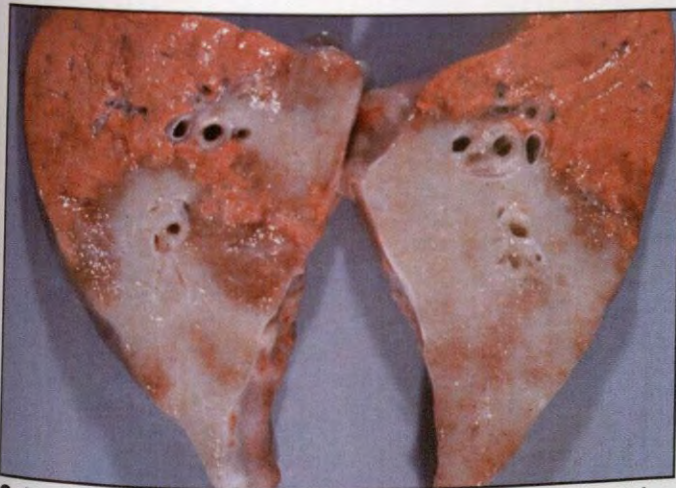
Source: Dr. C. Clarke, University of Edinburgh, Noah's Arkive.



Ovine Pulmonary Adenocarcinoma (Adenomatosis)

Sheep, lung. The lungs fail to deflate and the ventral edges of the lungs contain multiple white proliferative and fibrotic coalescing nodules.

Source: Dr. C. von Tscharner, Institute of Animal Pathology, Vetsuisse Faculty, University of Bern, Switzerland, Noah's Arkive



Ovine Pulmonary Adenocarcinoma (Adenomatosis)

Sheep, lung. The cut surface of the lung has large, firm, gray coalescing proliferative and fibrotic masses that are sharply demarcated.

Source: Dr. C. von Tscharner, Institute of Animal Pathology, Vetsuisse Faculty, University of Bern, Switzerland, Noah's Arkive



Paratuberculosis

Sheep, intestine. The mucosal surface of the intestine contains a roughened cobblestone appearance due to granulomatous infiltrates.

Source: AFIP



Plague

Primate, liver. The liver has multifocal to coalescing white lesions due to *Yersinia pestis*.

Source: AFIP



Q Fever

Goat, placenta. The intercotyledonary placenta is thickened, opaque, and multifocally covered by tan exudate. Margins of several cotyledons are tan (necrosis), and centers are mottled red-brown (congestion and exudation).

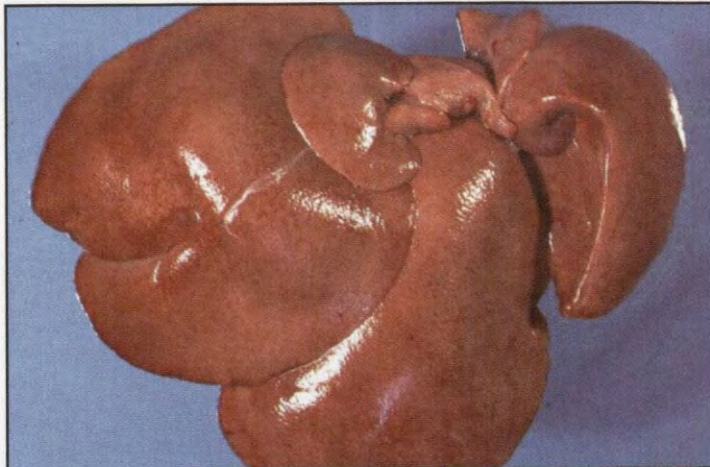
Source: Dr. J. Arzt, PIADC



Rabbit Hemorrhagic Disease

Rabbit. Severe epistaxis.

Source: Dr. J.P. Teifke, Federal Research Institute for Animal Health Riems, Germany



Rabbit Hemorrhagic Disease

Rabbit, liver. All liver lobes are swollen, pale and have a reticular pattern.

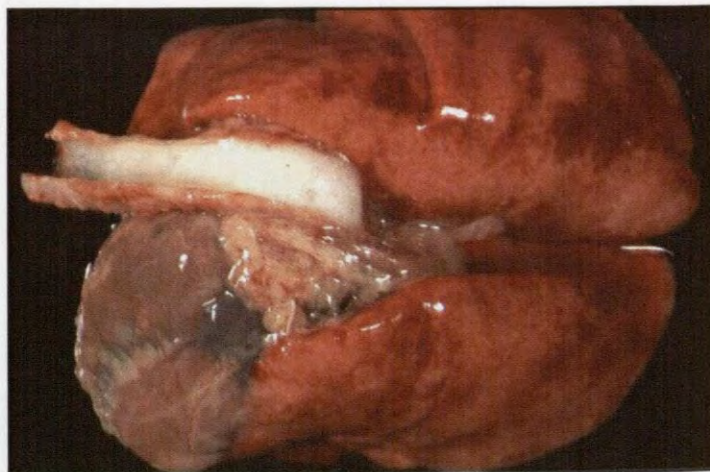
Source: Dr. J.P. Teifke, Federal Research Institute for Animal Health Riems, Germany



Rabbit Hemorrhagic Disease

Rabbit, liver. There is a large area of pallor (necrosis) with a prominent reticular pattern.

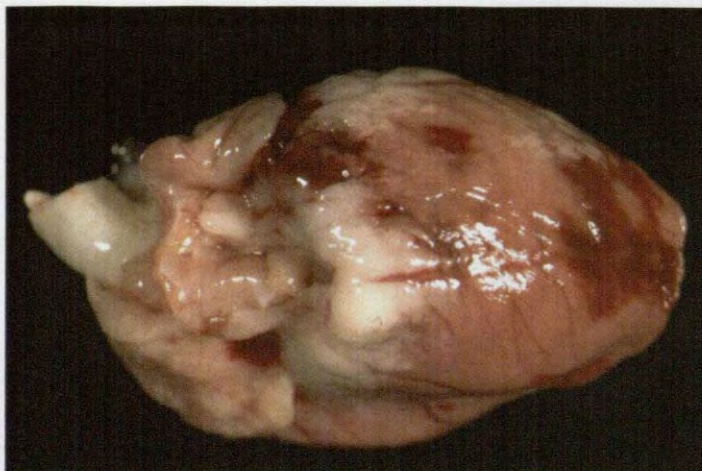
Source: Dr. J.P. Teifke, Federal Research Institute for Animal Health Riems, Germany



Rabbit Hemorrhagic Disease

Rabbit, lungs. The trachea is filled with foam, and the lungs are mottled and noncollapsed (severe pulmonary edema).

Source: Dr. J.P. Teifke, Federal Research Institute for Animal Health Riems, Germany



Rabbit Hemorrhagic Disease

Rabbit, heart. There are multiple epicardial hemorrhages.

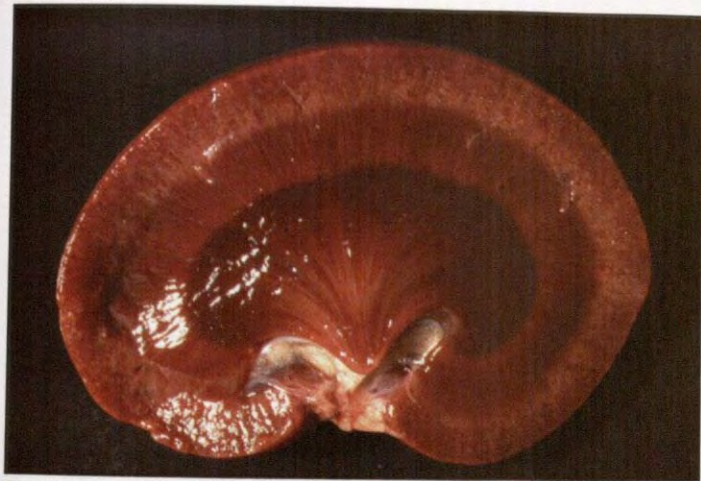
Source: Dr. J.P. Teifke, Federal Research Institute for Animal Health Riems, Germany



Rabbit Hemorrhagic Disease

Rabbit, spleen. The spleen is markedly enlarged and congested.

Source: Dr. J.P. Teifke, Federal Research Institute for Animal Health Riems, Germany



Rabbit Hemorrhagic Disease

Rabbit, kidney. There are petechiae throughout the cortex, and the medulla is severely congested.

Source: Dr. J.P. Teifke, Federal Research Institute for Animal Health Riems, Germany



Rift Valley Fever

Bovine, fetus. The skin of this emphysematous fetus is stained with meconium.

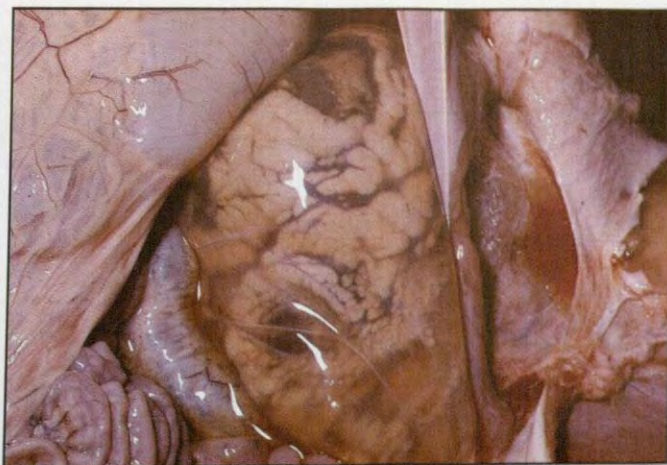
Source: PIADC



Rift Valley Fever

Sheep, fetus. Both the pleural and peritoneal cavities contain excessive clear, straw-colored fluid.

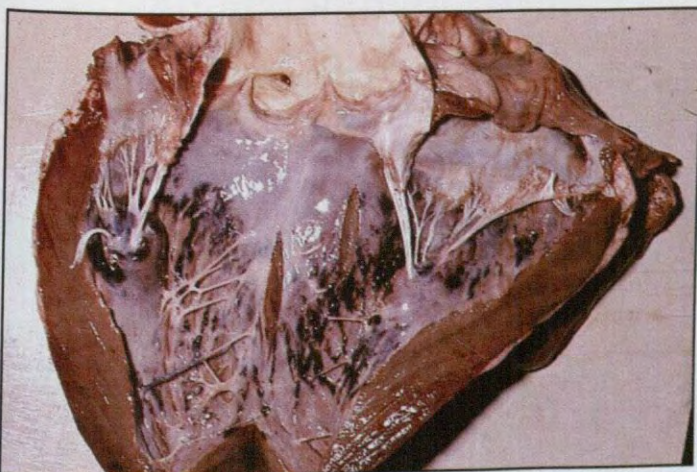
Source: PIADC



Rift Valley Fever

Sheep, fetus, kidney. There is severe perirenal edema.

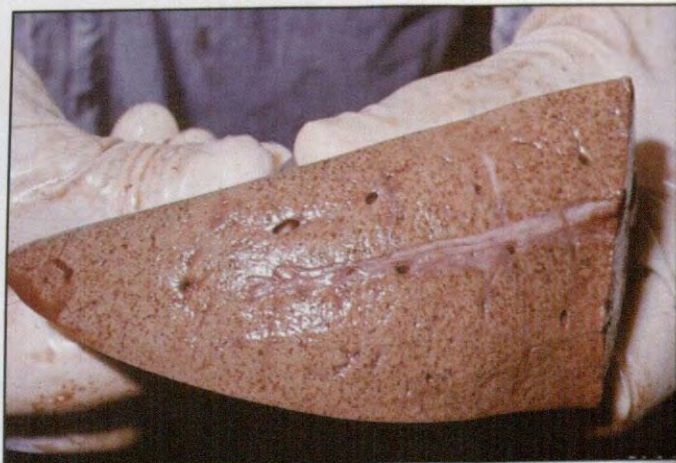
Source: PIADC



Rift Valley Fever

Sheep, heart. The ventricular endocardium contains many hemorrhages.

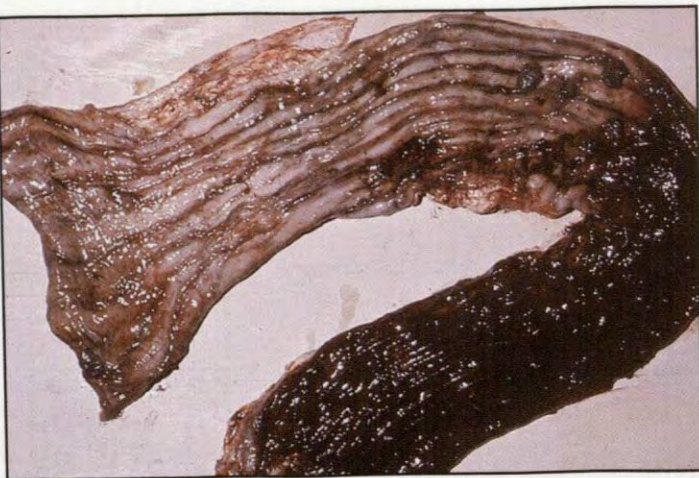
Source: PIADC



Rift Valley Fever

Sheep, liver. The cut surface of this swollen liver is pale and contains many petechiae.

Source: PIADC



Rift Valley Fever

Sheep, colon. There is severe locally extensive mucosal hemorrhage.
Source: PIADC



Rinderpest

Bovine, oral mucosa. There are numerous small gingival erosions.
Source: PIADC



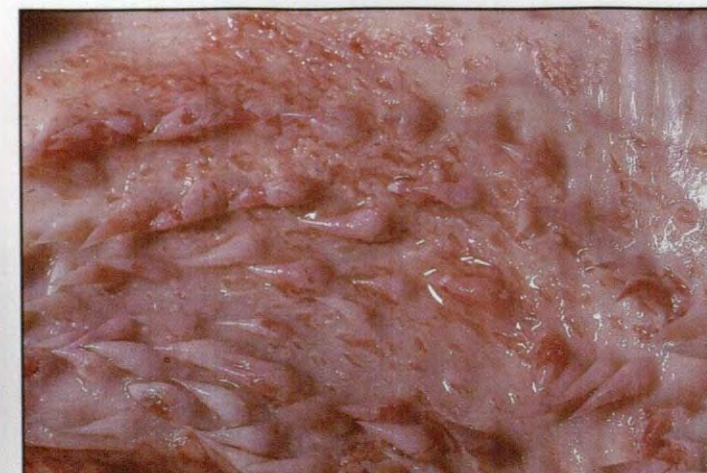
Rinderpest

Bovine, oral mucosa. There are numerous coalescing erosions on the ventrolateral lingual mucosa.
Source: PIADC



Rinderpest

Bovine, oral mucosa. There is severe diffuse necrosis/coalescing ulceration of the dental pad; mandibular mucosa contains smaller erosions.
Source: PIADC



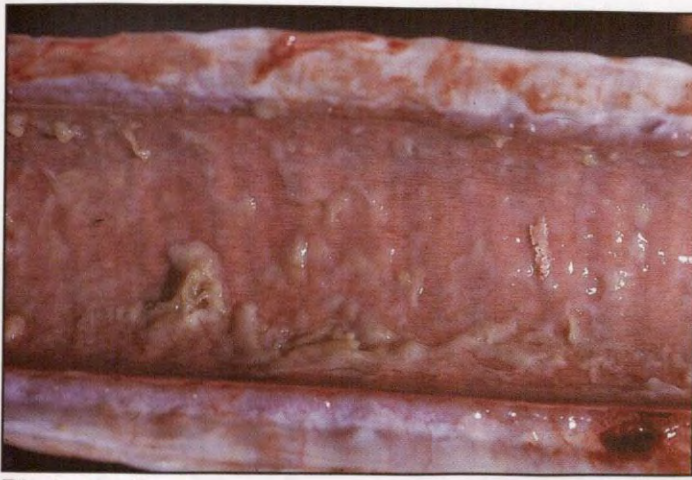
Rinderpest

Bovine, oral mucosa. There are numerous erosions on and between the buccal papillae.
Source: PIADC



Rinderpest

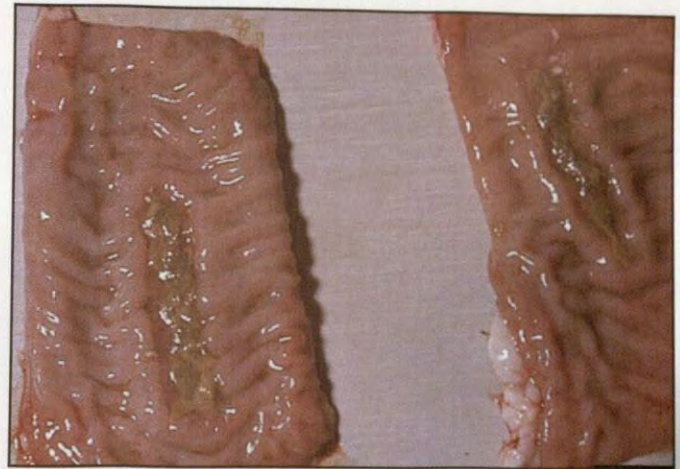
Bovine, hard palate. The mucosa contains many small, coalescing, pale to dark red erosions or foci of necrosis.
Source: PIADC



Rinderpest

Bovine, trachea. The mucosa is hyperemic and covered by abundant mucopurulent exudate.

Source: PIADC



Rinderpest

Bovine, ileum. Peyer's patches are depressed and covered by fibronecrotic exudate.

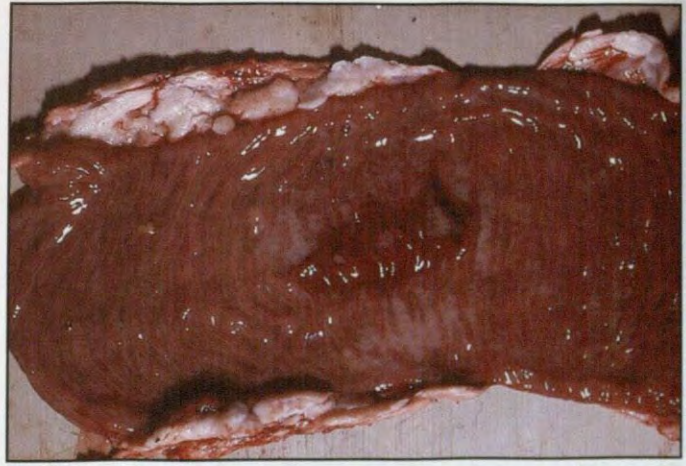
Source: PIADC



Rinderpest

Bovine, colon. There are many petechiae on the crests of the mucosal folds, and there are several small blood clots on the mucosal surface.

Source: PIADC



Rinderpest

Bovine, ileum. The mucosa is hemorrhagic and edematous, and the Peyer's patch is depressed (necrosis).

Source: PIADC



Rinderpest

Bovine, colon. The mucosa contains multiple longitudinal linear hemorrhages.

Source: PIADC



Screwworm Myiasis

Screwworm. Third instar screwworm larvae have dark tracheal tubes.

Source: Foreign Animal Diseases "The Grey Book" USAHA



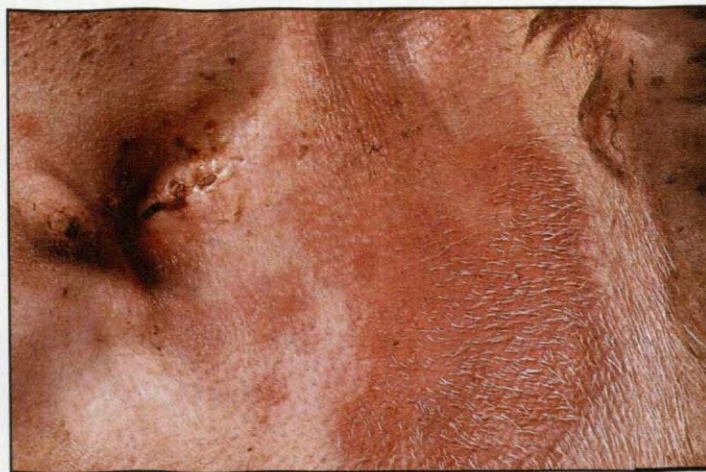
Screwworm Myiasis

Screwworm fly. The head of the adult fly is red-orange.
Source: Foreign Animal Diseases "The Grey Book" USAHA



Sheep Pox and Goat Pox

Sheep, inguinal skin. Several coalescing macules contain petechiae.
Source: PIADC



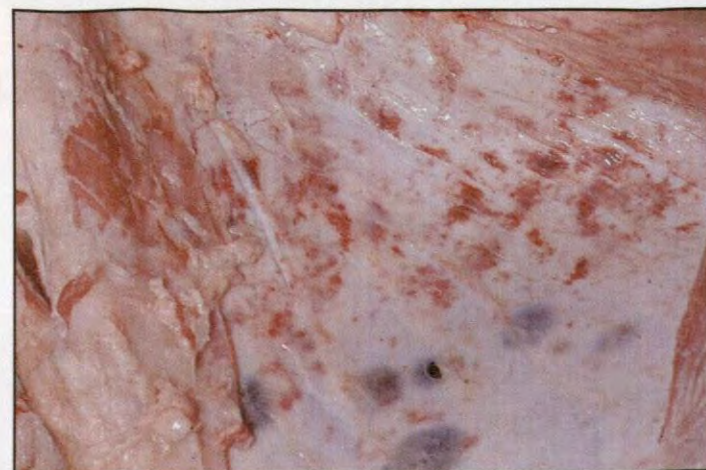
Sheep Pox and Goat Pox

Sheep, inguinal skin. There are several coalescing macules.
Source: PIADC



Sheep Pox and Goat Pox

Sheep, scrotum and inguinal skin. There are multiple red brown papules. There are two hemorrhagic ulcers on the medial aspect of the stifle.
Source: PIADC



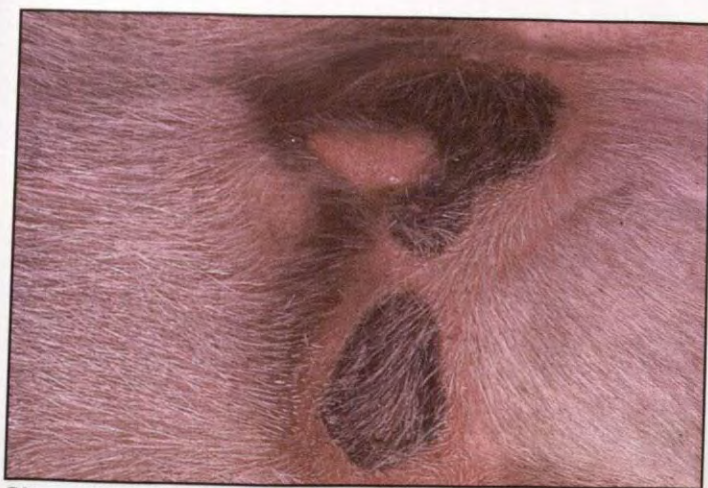
Sheep Pox and Goat Pox

Sheep, subcutis. There are numerous hemorrhages, and several dark red round foci of hemorrhage and necrosis (beneath cutaneous pox).
Source: PIADC



Sheep Pox and Goat Pox

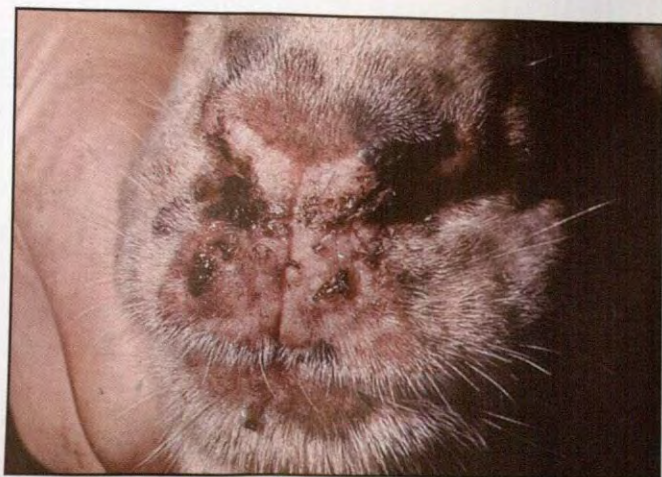
Goat. Two pox on the ventral tail have desiccated, dark red, undermined (necrotic and sloughing) centers.
Source: PIADC



Sheep Pox and Goat Pox

Goat, udder. The skin contains two sharply demarcated necrotic foci (subacute pox).

Source: PIADC



Sheep Pox and Goat Pox

Goat, muzzle. The muzzle contains several papules and is partially covered by hemorrhagic nasal exudate.

Source: PIADC



Sheep Pox and Goat Pox

Sheep, skin. Several coalescing pox have pale tan (necrotic) centers.

Source: PIADC



Sheep Pox and Goat Pox

Goat, skin. There are multiple coalescing papules (pox) that often have tan, dry (necrotic) centers.

Source: PIADC



Sheep Pox and Goat Pox

Small ruminant, lung. There are numerous, small, coalescing, red-tan, consolidated foci (pneumonia).

Source: PIADC



Sheep Pox and Goat Pox

Small ruminant, lungs. The lungs contain multiple discrete tan to red-brown nodules (multifocal interstitial pneumonia). Mediastinal lymph nodes are enlarged.

Source: PIADC



Sheep Pox and Goat Pox

Small ruminant, lung. There are numerous raised pale nodules (multifocal pneumonia).

Source: PIADC



Sheep Pox and Goat Pox

Small ruminant, lung. There are multiple discrete, round, red-brown foci of consolidation (pneumonia).

Source: PIADC



Sheep Pox and Goat Pox

Sheep, lung. The numerous widely disseminated discrete round tan foci are foci of pneumonia; a few have pale (necrotic) centers.

Source: PIADC



Sheep Pox and Goat Pox

Goat, lung. There are multiple coalescing tan foci of consolidation (pneumonia), and the adjacent lymph node is markedly enlarged.

Source: PIADC



Sheep Pox and Goat Pox

Small ruminant, uterus. The endometrium contains several tan papules (pox) among the caruncles.

Source: PIADC



Swine Vesicular Disease

Pig, skin. There is a deep ulcer on the dorsum of the snout.

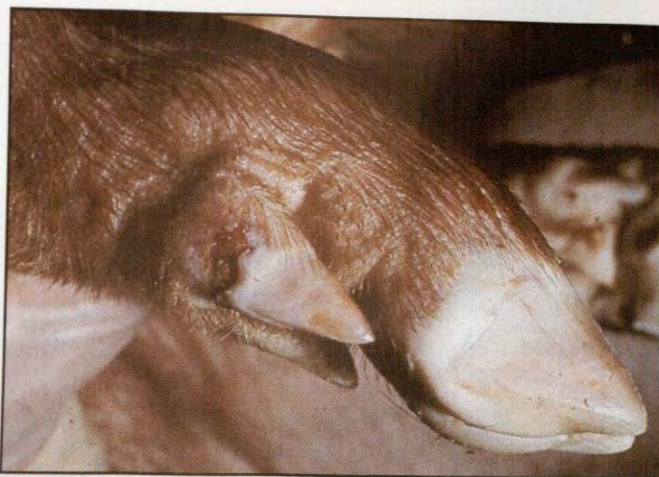
Source: ISU CVM



Swine Vesicular Disease

Pig, feet. There are multiple large erosions/ulcers of the coronary bands.

Source: PIADC



Swine Vesicular Disease

Pig, foot. The wall of the dewclaw is undermined adjacent to an ulcer at the coronary band.

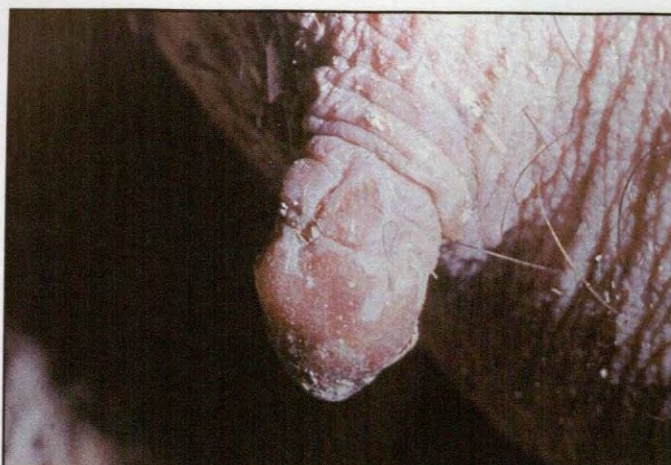
Source: PIADC



Swine Vesicular Disease

Pig, foot. A claw and both dewclaws have ulcers at the coronary bands.

Source: ISU CVM



Swine Vesicular Disease

Pig, skin. There are coalescing erosions on the teat.

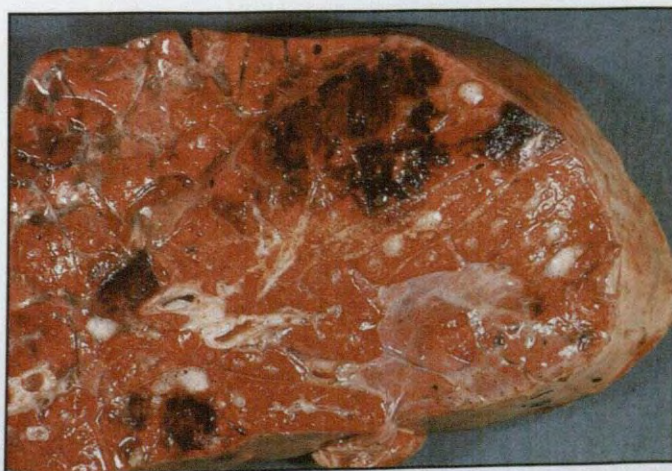
Source: ISU CVM



Theileriosis

Bovine, lung. The lung tissue is diffusely tan-brown, and lobules are noncollapsed and rubbery (interstitial pneumonia).

Source: PIADC



Theileriosis

Bovine, lung. Lung tissue is noncollapsed, contains multiple foci of hemorrhage, and there is fluid/foam within bronchi and interlobular septa.

Source: PIADC



Theileriosis

Bovine, popliteal lymph node. The node is enlarged and diffusely pale, and contains numerous petechiae.

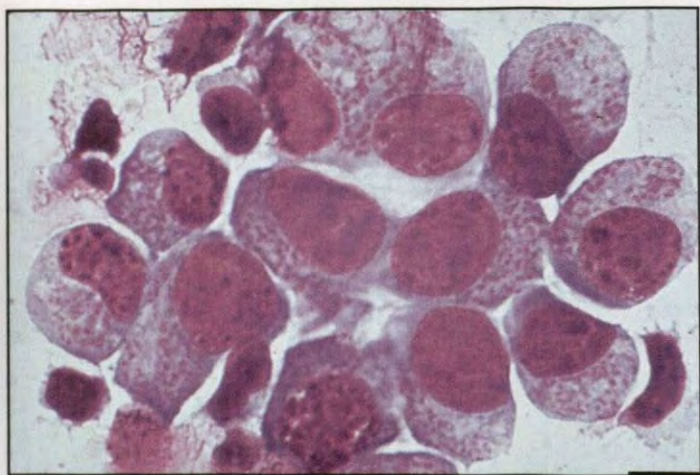
Source: PIADC



Theileriosis

Bovine, kidney. There are multiple petechiae on the surface of the cortex. The lymph node near the hilus is markedly enlarged.

Source: PIADC



Theileriosis

Bovine lymphoblasts contain intracytoplasmic *Theileria parva*.

Source: PIADC



Ticks (exotic)

Amblyomma variegatum - Ticks, skin. Ticks feeding on goat skin. Can transmit the agent of heartwater (*Ehrlichia ruminantium*).

Source: PIADC



Ticks (exotic)

Rhipicephalus annulatus (*Boophilus annulatus*) - Cattle tick, arthropod. Known to transmit babesiosis and anaplasmosis.

Source: AFIP



Ticks (exotic)

Rhipicephalus appendiculatus - Tick, arthropod. Brown ear tick and vector of theileriosis.

Source: PIADC



Ticks (exotic)

Rhipicephalus microplus - Tick, arthropod. Known to transmit babesiosis and anaplasmosis.

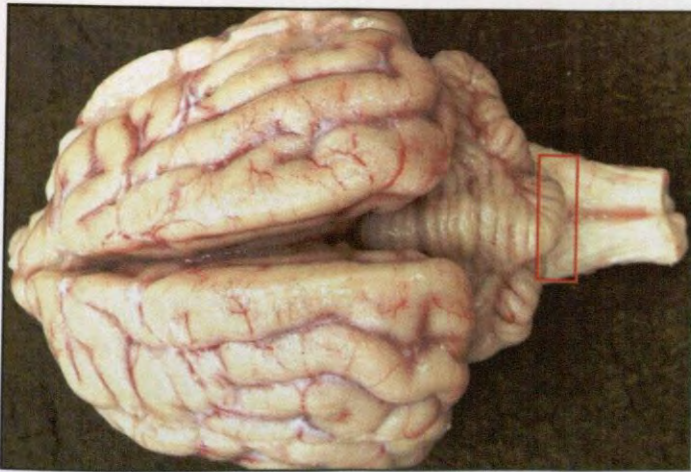
Source: Dr. J. Ostojic, ISU, CVM, VPTH



Ticks (exotic)

Ixodes ricinus - Tick, arthropod. Can transmit agents of babesiosis, louping ill, and other diseases.

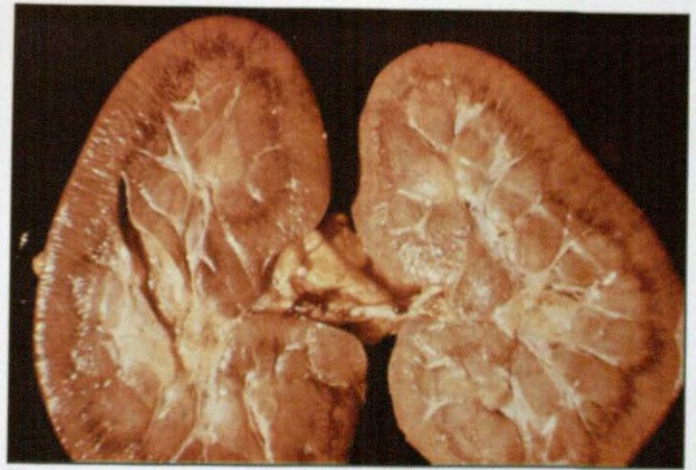
Source: Dr. J. Ostojic, ISU, CVM, VPTH



Transmissible Spongiform Encephalopathies

Brain. The red box indicates the region of the obex, the portion of the brainstem that is required for TSE diagnosis.

Source: Dr. S. Sorden, ISU CVM, VPTH



Trypanosomiasis, African

Horse, kidney. Cortex is pale and there are multiple petechial hemorrhages at the corticomedullary junction.

Source: AFIP



Trypanosomiasis, American (Chaga's Disease)

Dog, heart. There are multiple white linear streaks on the surface of the right and left ventricles corresponding to myocardial necrosis and myocarditis.

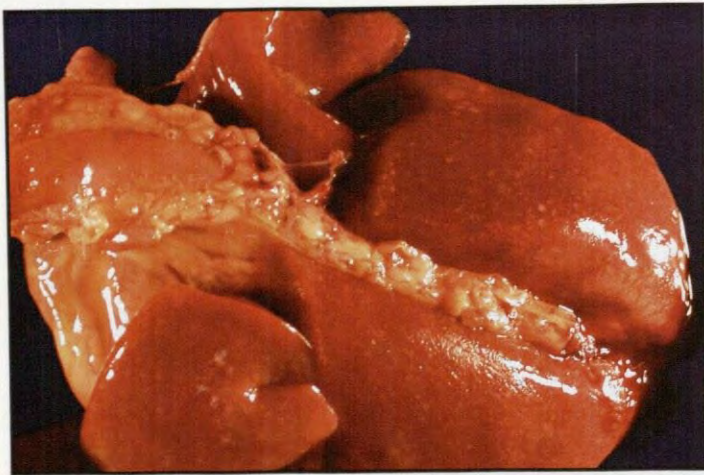
Source: Dr. S. Barr, Cornell University, CVM, Dept of Clinical Sciences



Tularemia

Beaver, liver. There are disseminated small pale foci of necrotizing hepatitis.

Source: Dr. G. Wobeser, CCWHC



Tularemia

Cat, lung. Numerous <1 mm diameter pale foci are disseminated throughout all lung lobes.

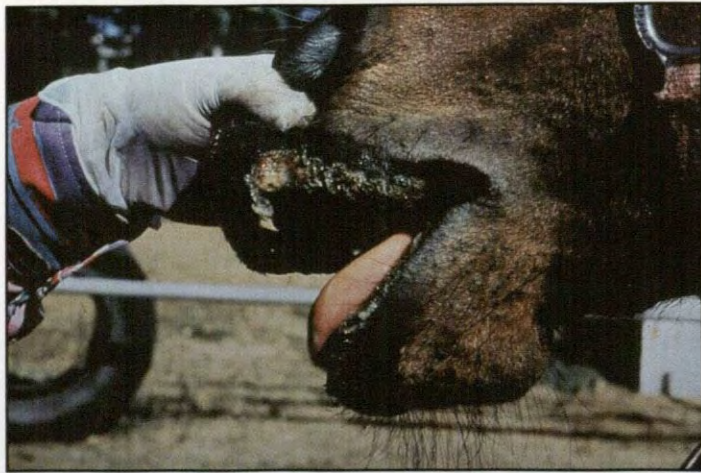
Source: Dr. J. Nietfeld, KSU CVM



Tularemia

Cat, spleen and liver. Numerous ~1 mm diameter pale foci are disseminated throughout the spleen; fewer pale foci are discernible in the liver lobe.

Source: Dr. J. Nietfeld, KSU CVM



Vesicular Stomatitis

Horse, mouth. There is extensive erosion of the lips at the mucocutaneous junction.

Source: ISU CVM



Vesicular Stomatitis

Bovine, mouth. There is extensive ulceration of the dental pad, and severe salivation.

Source: ISU CVM



Vesicular Stomatitis

Pig, skin. There is a large vesicle (bull's-eye) on the dorsal snout.

Source: ISU CVM



Vesicular Stomatitis

Bovine, mammary gland. The distal teat is severely eroded and hemorrhagic.

Source: ISU CVM



Vesicular Stomatitis

Bovine, foot. The coronary band at the heels is thickened, multi-focally eroded, and covered by dried necrotic exudate.

Source: PIADC.



Viral Hemorrhagic Septicemia

Fish, whole body. The external surface of the fish (gizzard shad) contains numerous ecchymotic hemorrhages.

Credit: Dr. P. Bowser, Aquatic Animal Health Program, CVM, Cornell University